THE IRON TRADE REVIEW

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Pig Iron Prices Harden as Demand Increases

Merchant Stacks Blowing Out — Large Number of Vessel Projects Pending in the East — Railroad Buying More Active

Pig iron prices are hardening on account of the recent increase in demand, and mill activity continues, but when any business of importance appears in finished lines, strong competition and frequently considerable cutting of prices are noted. During the past week, the United States Steel Corporation operated at 77 per cent of its capacity, and is scheduled this week to operate at 76 per cent. If this record could be maintained to the end of the present year, the Corporation's high mark of ingot output, about 14,100,000 tons in 1910, would be exceeded. During the first half of the year, the ingot output exceeded 6,000,000 tons. The rail and billet department of the Carnegie Steel Co. shows an increase of 34 per cent for the first seven days of this month, compared with the same period last month. For the past five weeks, the Steel Corporation has reduced its pig iron stocks about 75,000 tons, the total now being about 180,000 tons. Valley stocks now stand at about 900,000 tons.

Pig Iron Output

The decrease in the production of pig iron by merchant furnaces continued at a greater rate during July than during the preceding month. During July, 22 furnaces blew out, of which 16 were merchant stacks, while 11 non-merchant and only three merchant stacks blew in. There is now no merchant furnace in the country making Bessemer iron. The total production of coke and anthracite pig iron for July was 1,773,865 tons, an increase of 583 tons, but as July had one more working day than June, the daily average production for July was 57,221 tons, a decrease of 1,888 tons compared with June.

Plates and Shapes

In spite of rumors to the contrary, prices of structural material, except on small sizes made in jobbing mills, are firm in the Chicago district. The general contract for the Kansas City terminal which will require about 15,000 tons, has been awarded to the George A. Fuller Co. It is expected that the leading interest will furnish the steel. The Fuller company has also been awarded 2,000 tons for the Carleton hotel, Montreal. The Bingham Memorial Hospital, Boston, 1,000 tons, has been awarded to Wells Bros. Bethlehem shapes will be used in the new Industrial building, Baltimore, 1,200 tons. A. E. Norton & Co. will erect a loft building at Twenty-fifth street, New York, 1,200 tons. The Carnegie Steel Co. has a contract for 1,000 tons for an addition to the Westinghouse Electric & Mfg. Co. Bids have been received at Pittsburgh for 7,000 tons for a bridge across the Allegheny and tenders for 8,000 to 10,000 tons for a 24-story addition to the First National Bank building, have been invited. The East Jersey Pipe Co. has the contract for a Brooklyn water line. In connection with the Catskill acqueduct terminus, 4,000 tons of plates will go to Pittsburgh mills.

Not in years have so many contracts for ships been pending in eastern territory. One company is now figuring on 16 vessels, which will require about 50,000 tons, including four for the American-Hawaiian Line. The Carnegie Steel Co. will furnish the shapes and the Worth Bros. Co. the plates for two government colliers recently awarded, 11,000 tons.

Railroad Buying

There has been a considerable revival of interest on the part of the railroads, and a large number of inquiries for cars are pending. The Erie has placed 4,500 cars, including 2,000 hoppers, 1,000 gondolas, 1,000 box and 500 flat cars, dividing the order among the Pressed Steel Car Co., the American Car & Foundry Co., and the Standard Steel Car Co. The Atlantic Coast Line has placed eight postal cars with the Pressed Steel Car Co. The Standard Steel Car Co. has received an order from the Atlantic Coast Line for 1,000 cars. The Missouri Pacific has divided 50 all-steel cars between the Pullman Co. and the American Car & Foundry Co. The Southern railroad has ordered 21,000 tons of open-hearth rails from the Tennessee company, and has awarded the Cambria Steel Co. and the Maryland Steel Co. 5,000 tons each. The St. Louis & San Francisco has placed 4,100 tons of 65-pound rails with the Pennsylvania Steel Co. for 39 miles of new track. The Mt. Vernon Bridge Co. has 1,100 tons of track elevation for the Chicago & Western Indiana railroad, South Chicago.

Pig Iron

In the east, there is a marked tendency toward firmer prices for pig iron, and this is true to a considerable extent in southern territory, where $10 iron is now very scarce. An eastern steel maker is in the market for from 25,000 to 30,000 tons of basic, and a near Pittsburgh consumer has purchased 7,500 tons of basic at about $13, valley. Pipe companies in the Philadelphia district are actively in the market. The Westinghouse purchase of 12,500 tons of foundry grades, the most important transaction in the central west, established a price of $13.50, valley, for No. 2 foundry. A New Jersey consumer of ferro-manganese has covered for its next year's requirements, amounting to from 1,800 to 2,400 tons at $37.

WORLD'S IRON MARKETS

PITTSBURGH

Prices Generally Firmer—Some Encouraging Features.

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., Aug. 8.

The gradual improvement in new orders and specifications for steel during the past several weeks continues and as a result a number of mills have withdrawn low prices on plates and steel bars. While slight concessions are still being made, the extremely low quotations have entirely disappeared. Prices on billets, sheet bars, structural steel, wire products and tin plate are firm, although concessions of at least $1 a ton are still being made on sheets and some irregularity is noted in prices on pipe. Several mills have full rolling schedules as a result of the steady flow of orders, mostly for early shipment, and there is less occasion to offer concessions than in July. There has been a still further improvement in mill operations. The Carnegie Steel Co. is operating its Homestead, Duquesne, Clairton, New Castle, Ohio, and Bellaire plants full this week. The Republic Iron & Steel Co. is operating its blast furnaces and Bessemer and open-hearth departments to capacity, having started the remaining two new open-hearth steel furnaces during the week. The Cambria Iron & Steel Co., Johnstown, is operating all of its blast furnaces and open-hearth steel furnaces and has increased operations in its Bessemer department. Another encouraging feature of the local situation is that the railroads are showing more interest, although buying of rails and cars has been light. The Atlantic Coast Line has awarded a contract to the Standard Steel Car Co., Pittsburgh, for 1,000 cars. The Missouri-Pacific has increased its inquiry to cover 5,000 cars of various types, and it is estimated that at least 15,000 cars are involved in pending inquiries. The Carnegie Steel Co. will roll 5,000 tons of plates for a new gas holder at Pittsburgh. Donovan & Cranford, Brooklyn, are the low bidders on the riveted pipe work for water service in Brooklyn, which will require 4,000 tons of plates.

The Carnegie Steel Co. has a contract for 1,000 tons of structural steel for an addition to the Westinghouse Electric & Mfg. Co.'s plant. Bids close Friday on 7,000 tons of structural steel for an Allegheny river bridge at Pittsburgh, and bids have been asked on from 8,000 to 10,000 tons of steel for a 24-story addition to the First National bank, Pittsburgh. Shipments of tin plate are extremely heavy on account of the canning season. Manufacturers of wire anticipate a brisk fall buying movement and have withdrawn low prices. A sale of 7,500 tons of basic was made at not more than $13, valley. The Westinghouse Electric & Mfg. Co. bought 12,500 tons of foundry grades during the week. For the first time in years there is not a single merchant furnace making Bessemer iron at present.

Pig Iron. — The most important transaction in pig iron in this territory during the week was the purchase of about 12,500 tons of Nos. 1, 2 and 3 grades of foundry iron by the Westinghouse Electric & Mfg. Co. for delivery at its Northside, Pittsburgh, and Cleveland, plants, over the last four months of this year and the first three months of 1912. The business was divided among three or four sellers and was placed on a basis of $13.50 for No. 2, for delivery over the remainder of the year and about $13.75, valley, for shipment over the first quarter of 1912. It is understood, however, that comparatively little iron will come from the valley furnaces. The pig iron market in this territory shows considerable improvement over a week ago, although the Westinghouse deal was the only one of importance during the entire week. For the first time in years, there is not a single merchant furnace making Bessemer pig iron. Practically all of the Bessemer iron in the hands of middlemen has been disposed of. Sales were made recently at less than $15, valley, but in these cases brokers gave away at least part of their commission. The market today appears to be firm at $15, valley. The basic market is firmer, and while sales were made two weeks ago on a basis of $12.65, valley, the market today is quotable at $13, valley, and some sellers wil not quote below $13.25, valley. Large consumers of foundry, Bessemer and basic, who have been buying from month to month, are giving a great deal of attention to their forward requirements, and, while no particularly large written inquiries have appeared, there is considerable quiet negotiating on iron for forward delivery. There has been a fair amount of gray forge iron sold during the week in lots ranging from 500 to 1,000 tons on a basis of $13, valley, for delivery over the remainder of the year. Shipments against contracts previously made are heavy. Two of the leading independent steel companies are operating all of their blast furnaces and the Carnegie Steel Co. and one or two other non-merchant interests are expected to increase their blast furnace operations later in the month. The Scullin-Gallagher Iron & Steel Co., St. Louis, is taking bids on 10,000 tons of basic for delivery over the first half of next year, but sellers in this territory are not anxious to sell for that period except at a sharp advance over today's market and it is not likely that the business will be taken by valley furnaces. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$15.00
Bessemer, Pittsburgh	15.90
Basic, valley	13.00
Basic, Pittsburgh	13.90
No. 2 foundry, Pittsburgh	14.40
Gray forge, Pittsburgh	13.90
Malleable, Pitsburgh	14.15

(Third Quarter.)

Bessemer, valley	$15.00
Bessemer, Pittsburgh	15.90
Basic, valley	13.00
Basic, Pittsburgh	13.90
No. 2 foundry, Pittsburgh	14.40
Gray forge, Pittsburgh	13.90
Malleable, Pitsburgh	14.15

Ferro-Alloys.—No important sales have been made and little inquiry has appeared since prices on ferro-manganese were advanced to $37, seaboard. There has been no important trading in 50 per cent ferro-silicon, but prices are firmer and $53, Pitts-

burgh, is now being quoted, as the absolute minimum.

We quote ferro-manganese at $37, Baltimore, for prompt and forward delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $53, Pittsburgh, for prompt and forward delivery; 12 per cent, $25; 11 per cent, $24; 10 per cent, $23, f. o. b. Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—There is slightly more business in plates, despite the fact that no action has been taken on some of the larger inquiries for cars noted during the past 30 days. It is estimated that upward of 15,000 cars are involved in pending inquiries and the trade feels confident that several awards will be made in the very near future. The Carnegie Steel Co. will roll 5,000 tons of plates for the new gas holder to be built by the Riter-Conley Mfg. Co. for the Philadelphia Co., Pittsburgh. Donovan & Cranford are the low bidders on the proposed riveted pipe work for water service in Brooklyn, which will require 4,000 tons of plates and it is expected that this business will come to a local mill. The Standard Steel Car Co., Pittsburgh, has received an order from the Atlantic Coast Line for 900 box and 100 flat cars. The Pennsylvania Lines West today entered the market for 1,000 freight cars, including about 700 gondolas. The Missouri-Pacific has increased its inquiry to cover 5,000 cars of various types and it is understood that the Burlington system has asked for bids on 2,000 cars. Definite action has not been taken on the inquiry of the Erie railroad for 3,800 cars. Local car manufacturers report a fair run of orders for traction cars. There is still considerable shading of prices on plates, although the larger mills continue to ask 1.35c, Pittsburgh. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.30c to 1.35c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.20c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including 3-16 inch plate on thin edge, 0.10c; under 3-16 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—Conditions surrounding the sheet market are not as satisfactory as a month ago. There is very little new business appearing, although specifications against running contracts continue moderately heavy. Mills are operating on practically the same schedule as in July, some of the independent plants being operated to capacity. The American Sheet & Tin Plate Co. is operating its sheet and tin mills at about 75 per cent of capacity. Prices continue irregular with shading of upwards of $1 a ton by some of the smaller mills. We quote the market as follows, with $1 a ton added as the delivered price in the Pittsburgh district:

Blue annealed sheets No. 10 gage 1.45c to 1.50c; black annealed sheets No. 28 gage, 1.95c to 2c; galvanized sheets No. 28 gage, 2.95c to 3c; painted roofing sheets, 1.35c to 1.40c per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, 2.50c to 2.55c per square for No. 28 gage, 2½-inch corrugation f. o. b. Pittsburgh.

Tin Plate.—Shipments of tin plate are heavier at present than at any time this year, specifications against contracts previously made coming in at a very satisfactory rate on account of the canning season. Several of the larger independent plants are running full and the leading interest is operating more tin mills than for some months. One large consuming interest, which previously contracted for its full requirements over the remainder of the year, this week specified for the full tonnage covering the last four months of the year. We quote the market as follows:

Coke tin plate, 10-pound basis, 14 x 20, $3.70 f. o. b. mill, Pittsburgh district.

Rails and Track Material. — Steel rail mills in the western Pennsylvania field are not receiving very heavy specifications against running contracts and new business is chiefly for small lots. Rail mills, however, are running on practically the same basis as in July. There is a fair demand for light rails, new demand and specifications being about equal to those of the preceding week. Buying of railroad spikes and track supplies is more general, although no particularly large orders have been booked by local mills. We quote the market as follows, the base price on open-hearth steel rails being 1.34c, per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.16c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.25c, Pittsburgh.

RAILROAD SPIKES.

4½, 5 and 5½ x ⅝	$1.50
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x ⅜	.20
3, 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x ⅜	.60
2 x ⅜	.80

Steel.—Shipments of sheet and tin bars are heavy and demand for billets shows a slight increase, with the result that the semi-finished steel market shows a decided gain over the first eight days of July and a moderate increase over the closing week of that month. Steel mills in this territory are operating to greater capacity than for some months. The Homestead, Duquesne, Clairton, New Castle, Ohio, and Bellaire plants of the Carnegie Steel Co. are running practically full this week. The Republic Iron & Steel Co. has started the two additional new open-hearth steel furnaces and the new plant near Youngstown is now running to capacity. In some instances consumers are taking heavier shipments than specified for August delivery. Prices on Bessemer and open-hearth billets and sheet bars and forging billets are firm. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $21, with the usual extras for size and analysis, and open-hearth rolling billets, $21. Bessemer sheet and tin bars are quoted at $22, and open-hearth sheet bars are quoted at $22, f. o. b. Pittsburgh or Youngstown, with full freight to destination added. Forging billets are quoted at $26, Pittsburgh.

Hoops and Bands.—Local manufacturers of hoops report that business in this department is practically normal and the market is very firm at 1.40c, Pittsburgh. Some mills continue to quote 1.20c, Pittsburgh, on bands, although the general asking price of the larger mills is 1.25c, Pittsburgh. We quote the market as follows:

Hoops in carload lots, 1.40c, Pittsburgh; in less than carload lots, 1.50c; bands, 1.20c to 1.25c base, with net extras, as per standard steel.

Merchant Bars.—Owing to the fact that the larger mills are in a very comfortable position as far as new orders and specifications for steel bars are concerned, there has been a slight improvement in the price situation since Aug. 1. The minimum price quoted in this territory is now 1.20c, Pittsburgh, and a number of the manufacturers will not quote below 1.25c, Pittsburgh. Two companies in this territory, which reported an increase in mill orders and specifications in June over any previous month this year, state that the average so far this month exceeds that of the same period in June. New demand for bar iron is only moderate, but there has been little change in the price situation. There has been a slight

increase in demand for shafting, although the total bookings have been light. We quote the market as follows:

Common iron bars, 1.30c, Pittsburgh; Bessemer and open-hearth steel bars, 1.20c to 1.25c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3-inch, 1.35c, all f. o. b. mill. The following differentials are maintained on steel. Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 60 per cent off in carloads and 55 per cent in less than carloads, delivered in base territory.

Muck Bar.—There is slightly more activity in the muck bar market, although sales are chiefly for prompt delivery. We note a sale of all pig iron muck bar at $30, Pittsburgh. We quote muck bar nominally at from $28.50 to $29, Pittsburg, with a premium of $1 a ton for all pig iron muck bar.

Structural.—The improvement in the structural steel market noted recently continues. While most of the awards during the past week called for only small lots, heavy tonnage of structural steel is involved in proposed new work in this territory. The Carnegie Steel Co. has been awarded a contract for 1,000 tons of steel to be used in the extension of the Westinghouse Electric & Mfg. Co.'s East Pittsburgh works. Bids close on Friday of this week on the construction of the new bridge across the Allegheny river, Pittsburgh, involving 7,000 tons of steel. Bids are also going in on the addition of 24 stories to the First National Bank building, Fifth avenue and Wood street, Pittsburgh, which will require from 8,000 to 10,000 tons of steel. This building has been purchased by a large construction company. Local fabricating shops and structural steel mills are operating to greater capacity than for some months and prices appear to be slightly firmer. We quote the market as follows:

Beams and channels, 15 inches and under, 1.35c; over 15 inches, 1.45c; zees, 1.35c; tees, 1.40c; angles, from 3 to 6 inches, 1.35c; over 6 inches, 1.45c; universal and sheared plates, 6¼ inches wide and wider, 1.35c.

Merchant Pipe.—Pipe mills are running on a more satisfactory schedule than in June or July, due to the awarding of several fairly large contracts for line pipe during the past few weeks. The Southwestern Oil & Gas Co. has placed an order with a local mill for 14 miles of 4-inch steel pipe, but has not closed on its inquiry for about 60 miles of 12 and 16-inch pipe noted a few weeks ago. A Wyoming interest is expected to close in a few days for about 45 miles of 6-inch steel pipe. Jobbers are specifying rather freely against contracts for merchant iron and steel pipe, but there has been little, if any, improvement as far as prices are concerned. We quote the following official discounts in carload lots, subject to the usual preferential discount to the larger buyers, merchant pipe, where specified, being offered in from ⅛ to 6 inches:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼, ⅜ inch.....	72	58	68	54
½ inch	75	63	71	59
¾ to 1¼ inch.....	79	69	75	65
2 to 3 inches	80	70	76	66
	Lap weld.			
2 inches	76	66	72	62
2½ to 4 inches	78	68	74	64
4½ to 6 inches.....	77	67	73	63
7 to 12 inches.....	75	59	71	55
EXTRA STRONG, PLAIN ENDS.				
	Butt weld.			
⅛, ¼, ⅜ inch	69	59	65	55
½ inch	74	68	70	64
¾ to 1¼ inch	78	72	74	68
2 to 3 inches.....	79	73	75	69
EXTRA STRONG, PLAIN ENDS.				
	Lap weld.			
2 inches	75	69	71	65
2½ to 4 inches.....	77	71	73	67
4½ to 6 inches.....	76	70	72	66
7 to 8 inches.....	69	59	65	55
9 to 12 inches.....	64	54	60	50
DOUBLE EXTRA STRONG, PLAIN ENDS.				
	Butt weld.			
½ inch	64	58	60	54
¾ to 1¼ inch.....	67	61	63	57
2 to 3 inches	69	63	65	59
DOUBLE EXTRA STRONG, PLAIN ENDS.				
	Lap weld.			
2 inches	65	59	61	55
2½ to 4 inches.....	67	61	63	57
4½ to 6 inches.....	66	60	62	56
7 to 8 inches	59	49	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

Boiler Tubes.—There has been little if any, improvement in the market on boiler tubes. Prices are irregular. There is very little new business appearing, while specifications against contracts are light. We quote the following official discounts on steel boiler tubes in carload lots to jobbers:

1¾ to 2¼ inch.....	65
2½ inch	67½
2¾ to 3¼ inch	70
3½ to 4½ inch.....	72½
5 and 6 inch	65
7 to 13 inch	62½

To destination east of the Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products.—Early indications point to a brisk fall market on wire products, beginning about Sept. 1. In anticipation of more general buying next month, wire manufacturers have withdrawn concessions of $1 a ton below the price established June 20, and the market appears to be firm this week at $1.50, Pittsburgh, on plain wire, and $1.70, Pittsburgh, on wire nails. Local mills have rejected orders involving fairly heavy tonnage for delivery over the remainder of this year, which were offered at slightly lower prices. Mill operations, however, show little improvement over July. Jobbers who are covered by contract are sending in liberal specifications. There is little activity in the cut nail market, although prices appear to be firm at $1.70, Pittsburgh. We quote the market as follows:

Wire nails, jobbers' carload lots, $1.70; retailers' carload lots, $1.75; cut nails (western makers), jobbers' carload lots, $1.60; painted barb wire, jobbers' carload lots, $1.70; retailers' carload lots, $1.80, with 30c for galvanizing; plain wire to jobbers in carloads, $1.50, and to dealers, in carloads, $1.55; polished staples, $1.70; galvanized staples, $2.

Wire Rods.—Inquiry for small lots of wire rods for early shipment is slightly heavier, but no large sales have been made, as most users are covered by contract. The second rod mill of the Jones & Laughlin Steel Co., at Aliquippa, Pa., which is of the continuous type and consists of 16 trains of rolls, has been completed and likely will be started this week. This will give the Jones & Laughlin Steel Co. an annual output of 200,000 tons of rods, of which 150,000 tons will be used at the company's wire mills and the remainder sold in the open market. We quote $27, Pittsburgh, on Bessemer and open-hearth wire rods:

Coke.—Consumption of coke continues heavy, and prices are firmer than for several weeks. The improvement in the local situation is due largely to the increased operations by the non-merchant blast furnaces and to the fact that a large tonnage of furnace coke has been withdrawn from the open market. One or two steel works this month are accepting the maximum tonnage involved in contracts made some time ago. There has been very little negotiating for foundry coke, as most of the larger users are covered for the third quarter. Despite the fact that sales of both furnace and foundry coke during the past week have been chiefly for small lots for immediate shipment, prices on both grades are firmer and $1.50, ovens, is quoted as the absolute minimum on furnace coke for prompt shipment. One or two companies which resumed operations recently, are experiencing trouble in getting a sufficient number of men to operate their plants. We quote standard Connellsville furnace coke for prompt shipment at from $1.50 to $1.60, ovens, and for second half at from $1.60 to $1.70, ovens. On high grade Connellsville foundry coke, we quote from $1.85 to $1.95, ovens, for prompt shipment, and from $2 to $2.40, ovens, for forward delivery. The Connellsville *Courier's* figures for the week ending July 29 show 23,811 active ovens with an output of 284,297 tons, as compared

with 23,757 active ovens and a production of 282,633 tons the previous week.

Old Material.—Shipments of old material against contracts previously made are heavy. Consumers are showing more interest in the situation and are bidding more freely than for some months, while dealers and producers are holding for higher prices. Heavy melting steel is very firm at $13.25 to $13.50, delivered. Moderately heavy buying at the lower figure is noted, and in some instances sales have been made at $13.50, delivered. There is a good demand for bundled sheet scrap and sales have been made at an advance of 50 cents a ton. Bids closed today on the scrap list of the Pennsylvania Railroad Co., involving upward of 15,000 tons, including 6,000 tons of heavy melting steel. Other roads in this territory realized better prices on their scrap this month than in June or July, and it is understood that higher prices were quoted on the Pennsylvania's offerings. We quote, gross tons, delivered in the Pittsburgh district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	$13.25 to 13.50
Rerolling rails	13.50 to 14.00
Bundled sheet scrap	11.50 to 12.00
Iron axles	23.50 to 24.00
Old iron rails	15.50 to 16.00
Stove plate	10.00 to 10.50
No. 1 wrought scrap	13.50 to 14.00
Old car wheels	12.75 to 13.00
Low phosphorus	16.00 to 16.50
Machine shop turnings	9.50 to 10.00
Cast borings	9.00 to 9.50
No. 1 cast scrap	13.00 to 13.50
Malleable	12.50 to 13.00

CHICAGO

Some Delay in Delivering Shapes—Contract for Kansas City Terminal.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Aug. 8.

On the whole, the steel mills in the Chicago ditsrict will probably make a good average showing of tonnage during August. The business, however, is somewhat spotted. The structural mills are so well filled that the buyer for prompt shipment must wait in some cases two or three weeks until the regular rolling schedules will provide the sections which he requires and in some cases there is disappointment because buyers are not able to get immediate shipment as readily as a few months ago. This condition is distributing the prompt shipment business among the mills in a very satisfactory manner and the price is firm at 1.53c, Chicago, on standard sections. Light jobbing mill sections may be sold at concessions, as they have been in the past, but the standard mills are very firm. Plates are not so strong and concessions are more readily given, especially on narrow sizes. The sheet mills are well filled with orders for August and new business is coming in at a very satisfactory rate. Merchant bar trade is slow. Bar iron is pretty firm at 1.25c, but only because the mills find they cannot produce it at a lower price, after trying for many months. Scrap is quiet. Buyers are generally slow in all lines because the demand for their finished products is backward. The general contract for the Kansas City Terminal has been awarded to the George A. Fuller Co. About 15,000 tons of steel will be required but this has not been awarded.

Pig Iron.—Southern furnaces have all withdrawn the $10 price which was generally available during July for last half business. The buyers have shown no interest in this movement, which confirms the opinion that they took iron at $10 because it was cheap and not on account of any increase in consumptive demand. There is still a fair amount of iron to be had for prompt shipment at $10, usually broken lots from furnace stocks. There have been several sales to stove manufacturers, amounting to a few thousand tons and also a few scattered lots to foundries, but generally the market is very quiet. Northern iron is a little more active this week. Malleable foundries which have recently made inquiries for contract iron, with deliveries running into next year, have been unable to interest the furnaces. In several cases, they have bought 500 to 1,000-ton lots of malleable Bessemer for this year's delivery. There has also been a little more inquiry for northern foundry iron and the market has taken on a more healthy tone without any change in prices. There are scattering inquiries for small lots of high silicon and other special grades.

The following prices represent the market for Chicago delivery, except northern foundry No. 2 and malleable Bessemer, local furnaces, which are quoted f. o. b. furnace:

(Shipment this year.)

Lake Superior charcoal	$17.00
Northern foundry No. 2	14.50
Southern foundry No. 2	14.35
Southern silveries, 5 per cent silicon	16.35
Jackson Co. silveries, 8 per cent	18.40
Malleable Bessemer	14.50
Alabama basic	14.60

Billets.—The current demand is limited to carload lots of forging billets, on which low prices are being made. There is no demand at present for rolling billets in this district and the large buyers of forging billets have contracts for their requirements. We quote as follows, f. o. b. Chicago: Open-hearth forging billets, $26 to $27; re-rolling billets, $23.60.

Merchant Bars.—The mills holding agricultural contracts are getting good specifications and there is a fair current demand for soft steel bars, but sales outside of contract business are showing very little gain. The leading mills are holding the price firm at 1.43c on ordinary current orders for soft steel. The only buyers who are able to get concessions are those like bolt manufacturers, who take a very large tonnage. No improvement is reported in bar iron or hard steel.

We quote, Chicago delivery, as follows:

Bar iron, 1.20c to 1.25c; hard steel bars, rerolled, 1.20c to 1.25c; soft steel bars and bands and small shapes, 1.43c, base; hoops, 1.63c to 1.68c; smooth finished machinery steel, 1 inch and larger, 1.83c. Shafting 60 per cent off list for carload lots, 55 per cent off for less.

On iron and steel from local stock, we quote, as follows:

Bar iron, 1.80c to 1.90c per pound base; soft steel bars, 1.65c to 1.75c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—The mills are so well booked on structural shapes that they cannot change rolls for a small order, as they have been doing the past year, and in some cases the buyer has to wait a few weeks until regular rolling schedules will bring around the sections that he wants. There is a good demand for steel for prompt shipment. One buyer last week, who inquired for 2,000 tons of standard sections, could not develop any better price than 1.35c, Pittsburg, or 1.53c, Chicago. Light sections which are rolled on jobbing mills have sold at concessions, but the market seems to be firm on standard sections. The largest contract pending for fabricated material is for the new terminal at Kansas City. No official announcement has been made of the award, but it will go to the American Bridge Co. The contracts reported let in this market last week are as follows: Molasses storage tanks for Amalgamated Sugar Co., Ogden, Utah, 110 tons, to the Scully Steel & Iron Co.; viaducts over Prairie du Pont Creek, Illinois Central Railway, in East St. Louis, Ill., Mobile & Ohio Railway north of Columbia, Ill., and Mobile & Ohio Railway, south of Columbia, Ill., 819 tons, to the American Bridge Co.; building for the Northwestern Iron Co., Mayville, Wis., 151 tons, to the Worden-Allen Co.; Sharples Building, Chicago, 321 tons, and three small steel-faced, rock-filled dams for Boston-

Colorado Power Co., of Denver, 111 tons, to North Works, Illinois Steel Co.; sub-station for Commonwealth-Edison Co., Chicago, 131 tons, to the Gage Structural Steel Co.; superstructure for track elevation, C. & W. Indiana Ry., So. Chicago, Ill., 1,200 tons, to the Mt. Vernon Bridge Co. Other lettings on which many names of successful bidders are not reported are two steel bridges for the Chicago, Ottawa & Peoria Ry. Co., across Dupage River and Aux Sable Creek, 100 tons; repairs for Twelfth street viaduct, C., R. I. & P. Ry., Chicago, 211 tons; Lowry Boiler Room, St. Paul, Minn., 196 tons; post office and court house at Sioux Falls, S. D., 103 tons; school building, Gary, Ind., 167 tons; power station for Chicago, Suburban Light & Power Co., Oak Park, Ill., 131 tons; store building for H. F. W. Schaller, Watertown, S. D., 102 tons.

We quote, structural material f. o. b. Chicago as follows:

Beams and channels, 15 inches and under, 1.53c. For extras, see Pittsburg report.

Plain material out of store is as follows:

All angles, 3 inches and larger, including 6 inches, $1.75 to $1.85 per 100 pounds; angles over 6 inches, $1.85 to $1.90 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.75 per 100 pounds, base; channels, 3 inches and larger, $1.75 per 100 pounds, base.

Rails and Track Fastenings.—The rail market is quiet, but current bookings for track fastenings are running above normal. The mills are in steady operation.

We quote, light rails, f. o. b. Chicago, and track supplies, f. o. b. Joliet, as follows:

Light rails, carloads, 40 to 45-pound, 1.16c to 1.20½c; 30 to 35-pound, 1.19½c to 1.24c; 16, 20 and 25-pound, 1.20½c to 1.25c; 12-pound, 1.25c to 1.29½c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.65c to 1.75c; smaller size spikes, 1.70c, base; track bolts with square nuts, 2.10c to 2.20c, base.

Plates.—The market is not so firm on plates as on structural shapes, although concessions are reported on only narrow sizes. The mills are running full and prospective car orders are encouraging. The B. & O. has inquired for 1,000 to 10,000 freight cars.

We quote, mill prices, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.48c to 1.53c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.75c to 1.85c.

Sheets.—Occasional buyers are disappointed because they cannot obtain shipment in 24 hours on mill lots of sheets. The mills are getting so well filled that they are arranging their rolling schedules from the standpoint of mill economy and where many sizes of sheets are specified in an order it may take several weeks to make delivery. New business is coming in at a satisfactory rate, with no change in prices.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

We quote, store prices, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2.00c; No. 12, 2.05c. Box annealed, No. 28, 2.65c. Galvanized, No. 28, 3.55c.

Wire Products.—The quiet season continues in the wire trade, both in the jobbing field and among manufacturing consumers.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers' less than carload lots, $2.03; painted barb wire, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers', less than carload lots, $2.03, with 30c for galvanizing; plain wire to jobbers, $1.68; plain wire, retailers' carload lots, $1.73.

Merchant Pipe and Tubes.—Outside of Chicago business is good, but in this city the plumbers' and steam-fitters' unions have not settled their local war, although it is reported that their trouble will be settled and that they will resume work in the near future.

We quote, merchant pipe and tubes out of store, Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛-⅜ inch	69.2	54.2	63.2	48.2
¼ inch	72.2	59.2	66.2	53.2
2 in. to 3 in.	77.2	66.2	72.2	61.2
4½-6 inches	74.2	63.2	69.2	58.2
7-12 inches	71.2	54.2	67.2	50.2
Extra Strong Plain Ends.				
½ inch	70.2	63.2	54.2	52.2
2-3 inches	75.2	68.2	61.2	55.2
7-8 inches	65.2	....	59.2	47.2
Double Extra Strong.				
½ inch	58.2	50.2	....	....
2-3 inches	63.2	55.2	....	....
7-8 inches	53.2	41.2	....	....

Tubes.

	Lap weld steel. Per cent.	Charcoal iron. Per cent.	Shelby seamless. Per cent
1 inch	39	..	57½
1¼ to 2¼ inch	55	40	35
2¾ to 3¼ inch	62½	50	46

Cast Iron Pipe.—The award has not yet been announced at Minneapolis on the 3,000 tons of water pipe pending in that city. At Portland bids have been received on 3,900 tons. It is understood that a Portland foundry is the low bidder on a part of the business and the remainder will go to the United States Cast Iron Pipe & Foundry Co. Second orders and current business are coming in at a satisfactory rate. The leading interest last week sold 1,400 tons of 24-inch pipe to a private company at South Omaha.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $25.25; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material.—The Chicago market continues very quiet. Some of the leading dealers undertook last week to mark up the price of heavy melting steel, but were unsuccessful in moving the market as the buyers in this district have large stocks and are very independent. Re-rolling rails are a shade higher. The Great Northern railway has offered a list of about 10 000 tons, f. o. b. St. Paul. Two other roads, the Soo and the Monon, have small lists. The current demand does not indicate any increase in mill or foundry consumption.

We quote, for delivery in consumers' yards, Chicago, as follows:

GROSS TONS.

Old car wheels	$12.75 to 13.25
Old iron rails	14.50 to 15.00
Rerolling rails (5 ft. and over)	12.50 to 13.00
Old steel rails (3 ft. and under)	11.25 to 11.75
Frogs, switches and guards	10.50 to 11.00
Heavy melting steel	10.50 to 11.00
Shoveling steel	9.90 to 10.40

NET TONS.

No. 1 R. R. wrought	$11.00 to 11.50
No. 2 R. R. wrought	10.00 to 10.50
Arch bars and transoms	13.75 to 14.25
Knuckles, couplers and springs	10.00 to 10.50
Shafting	15.00 to 15.50
Iron car axles	18.00 to 18.50
Steel car axles	16.00 to 16.50
Locomotive tires	14.00 to 15.00
Dealers' forge	9.50 to 10.00
Pipes and flues	8.00 to 8.50
No. 1 cast	10.75 to 11.25
No. 1 busheling	8.75 to 9.25
No. 2 busheling	6.75 to 7.25
No. 1 boiler cut	7.50 to 8.00
Boiler punchings	12.50 to 13.00
Cast and mixed borings	5.50 to 6.00
Machine shop turnings	6.50 to 7.00
Railroad malleable	10.00 to 10.50
Agricultural malleable	9.25 to 9.75
Angle bars, splices, etc., iron	12.00 to 12.50
Angle bars, steel	10.00 to 10.50
Stove plate and light cast scrap	9.25 to 9.75

CLEVELAND

Important Transaction in Foundry Iron.—Sale of Bars at Toledo.

Office of THE IRON TRADE REVIEW,
Penton Building, Aug. 8.

Iron Ore.—Buying continues on a very small scale and prospects give little sign of improvement. Shipments for this season up to Aug. 1, show a decrease of over 7,000,000 tons as compared with the same period last year. Since the latter part of last year's shipments declined rapidly, it would appear that if the rate of shipment for the remainder of this year continues at even last year's rate for the same period, this season's total shipments will reach

only about 34,000,000 tons, compared with 42,000,000 tons last year.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron. — The most important transaction in foundry iron in months was the Westinghouse Electric & Mfg. Co.'s purchase of 12,500 tons for its Pittsburgh and Cleveland works, for it established the figure for No. 2 foundry valley basis. It is understood that a Cleveland firm took the bulk of the business, which was for last half delivery, but that it refused to quote on next year's delivery, part of the tonnage asked being for first quarter. The reason given was that it did not wish to take chances on the coke market. It is understood that while the total tonnage included No. 1, No. 2 and No. 3 foundry, yet the business went on the basis of $13.50 valley for last half, and at $13.75 valley for first quarter. Of the total tonnage, 6,000 tons will go to the Cleveland works and the remainder to the Pittsburgh plant. No sale has yet developed from an inquiry put out by a local cast iron pipe concern. The latter is very busy, and foundries generally are steadily taking iron in satisfactory quantities, although no one user has taken a large tonnage. We quote, delivered Cleveland, as follows:

No. 1 foundry	$14.50
No. 2 foundry	14.25
No. 2 southern	14.35
Gray forge	13.25
Bessemer	15.90
Lake Superior charcoal	17.50
Jackson Co. 8 per cent silvery	18.00

Coke.—The local furnace coke market is listless, but foundries are steadily taking coke on contracts under which they appear to be fairly well covered. We quote:

Connellsville furnace coke, $1.45 to $1.60 for prompt delivery, and $1.60 to $1.80 for second half, Connellsville foundry coke, $1.80 to $2 for prompt, and $2.15 to $2.35 for second half.

Finished Material.—Little new business of any size is coming out in structural steel and the only prospect of anything like a fair tonnage is the city hall project, which may be hung up some weeks longer. Specifications continue to be received in satisfactory volume and mills are being pressed for deliveries. The recent purchase of 800 tons of reinforcing steel bars for an American Can Co. project at Toledo brought out a sale price of 1.20c. This was the identical price at which the two leading makers bid, the award being made to the leading interest. Steel bars continue to be sold at 1.25c, the more desirable tonnages getting the 1.20c price, while the higher price is the more general. Sheets, both black and blue annealed as well as galvanized, continue fairly firm at the $1 price a ton under the generally quoted figure, this lower price having been established some weeks ago. Billets are not attracting the attention they did some weeks ago when a lot was sold here slightly under the general quotation. It would appear, therefore, as if the billet price is fairly firm.

Old Material.—Heavy melting steel continues to be the feature of the local scrap market, although there is little such prominence given it by consumers. Some fair tonnages are being taken by local consumers at about the market price. Still, at least one outside user is bidding in the Cleveland market for tonnage, one offer being $12.50 f. o. b. Cleveland. Bushleing is in better demand among dealers because of the resumption by the Empire mill and the prospect of resumption of the Union mill in a short time. All three local mills are inquiring for more or less material, and there promises to be more of a movement of scrap, although not at materially higher prices, than in several months. A sale of 1,300 tons of steel rails, for the larger part at $14 and the smaller portion going at a shade under $14, has established a price $1.50 higher than the last sale. We quote, gross tons, f. o. b. Cleveland, as follows:

Old iron rails	$15.50 to 16.00
Old steel rails (under 6 ft.)	13.00 to 14.00
Old steel rails (over 6 ft.)	13.50 to 14.00
Relaying rails	20.00 to 21.00
Old car wheels	12.00 to 12.50
Old steel boiler plate	10.00 to 10.50
Malleable iron (railroad)	12.00 to 12.50
Steel axles	19.00 to 19.50
Axle turnings	9.50 to 10.00
Malleable iron (agricultural)	11.50 to 12.00
Heavy steel	12.25 to 12.75
Country mixed steel	9.50 to 10.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$12.00 to 12.50
No. 1 busheling	10.75 to 11.50
No. 1 machine cast	11.50 to 12.00
No. 1 dealers' wrought	11.50 to 12.00
Machine shop turnings	8.00 to 8.50
Pipes and flues	8.00 to 8.50
Wrought drillings	8.00 to 8.50
Stove plate	9.50 to 10.00

The Globe Iron Co., Jackson, O., on July 26, turned its blast furnace on Bessemer ferro-silicon pig iron which it is manufacturing and marketing under the brand of "Tubal-Pencost." The Globe company is making a uniform iron of highest silicon with lowest phosphorus and sulphur, aiming to make "Tubal-Pencost" the standard for ferro-silicon on a par with "Globe" high silicon silvery making Jackson county softeners so widely noted.

Sellers' Position Stronger, But Market is Not Active.

Office of THE IRON TRADE REVIEW,
80 Provident Bank Bldg., Aug. 8.

Pig Iron.—The situation as viewed from the sellers' standpoint is apparently much stronger than it was several weeks since, and southern furnaces as a rule are holding to the advanced schedule. This has had the effect of causing some decline in interest of spot demand, and has resulted in consumers feeling the market for the last quarter of this year as well as the first quarter of next. Inquiry, however, shows a slight decline under what it was a week or two since, and the major part of the sales that have been made show that they have been consummated without general inquiry. Several of the selling agencies note a number of requests to hold up shipments for various reasons, although as a general proposition it may be stated that this is the exception rather than the rule. As a number of furnaces in the Ironton district are at the present time out of blast, it is a fair proposition to say that sufficient tonnage has been sold during the past month or two to reduce furnace stocks, yet without changing established quotations. Contiguous territory both east and west is said to have made a better exhibit in the way of sales than anything that has been reported locally, and selling agencies are satisfied that this will have a beneficial effect upon the market in general. While several of the large producers of the south are now quoting on a $10.25 to $10.50 Birmingham basis, particularly for the remainder of the year, a number of standard brands are said to be obtainable at $10 for early delivery. There is an inquiry from one of the large pump companies for local delivery during the rest of the year for 600 tons of southern analysis grades, and one for 500 tons for eastern delivery. With freight rates from Birmingham $3.25 and from Ironton $1.20, we quote as follows:

Southern foundry No. 2	$13.25
Southern foundry No. 3	12.75
Southern foundry No. 4	12.50
Southern gray forge	12.00
Mottled	12.25
Southern No. 1 soft	14.70
Southern No. 2 soft	14.20
Standard southern car wheel	25.50
Northern No. 2 foundry	14.20
Northern No. 3 foundry	13.70
Northern No. 4 foundry	13.20
Jackson county 8 per cent silicon	16.95

Coke.—The coke market is very

quiet, and little aside from spot requirements is being sold. Prices do not indicate any marked change notwithstanding the fact that production is said to show some curtailment. We quote from the leading coke producing districts:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.00 to 2.25	$2.00 to 2.40
Furnace coke	1.50 to 1.65	1.65 to 1.75
Wise county district:		
Foundry coke	2.00 to 2.25	2.00 to 2.25
Furnace coke	1.75 to 2.00	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.00 to 2.15	2.00 to 2.35
Furnace coke	1.60 to 1.75	1.75 to 1.85
New river:		
Foundry coke	2.50 to 3.15	2.60 to 3.25
Furnace coke	2.10 to 2.15	2.10 to 2.20

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—The market for finished material, particularly along the line of structural demand, is decidedly good, and a fair tonnage is being sold. Perhaps the largest construction now pending is the Gilbert Avenue viaduct, which will probably be closed within the next 60 days. Prices are unchanged and well maintained.

Old Material.—A little better tone exists in the scrap iron market, and while no particularly large sales have been reported, a better feeling prevails and dealers are greatly encouraged. Prices so far as ascertained are about on the same level they were a week since, but are slightly stiffer. We quote dealers' prices about as follows:

GROSS TONS.

Old iron rails, gross	$14.00 to 14.50
Old steel, rerolling, gross	13.00 to 14.00
Old iron axles, gross	19.25 to 19.75
Steel melting scrap, gross	11.00 to 11.75
Car wheels, gross	11.50 to 12.50

NET TONS.

Old No. 1 R. R. wrought	$12.25 to 12.75
No. 1 machinery	10.50 to 11.00
No. 1 busheling	9.25 to 9.75
Stove plate	7.75 to 8.25
Machine shop turnings	6.50 to 7.00
Cast borings	5.50 to 6.25
Grate bars	7.25 to 8.00
Sheet scrap, bundled	8.00 to 9.00
No. 1 cast scrap	10.00 to 11.00
Heavy turnings	7.75 to 8.75

Into Larger Offices.—On Feb. 1, Hickman, Williams & Co. consolidated their accounting departments, moving their books, formerly kept at Louisville, Chicago and New York, to Cincinnati. This has necessitated their taking larger offices in Cincinnati, and they have just moved into their new quarters on the eighth floor of the First National Bank building.

PHILADELPHIA

Pig Iron Clearly Strengthening—Heavy Sales and Inquiries.

Aug. 7.

Heavier bookings by the furnaces of eastern Pennsylvania during the past month or two are clearly reflected in the hardened condition of pig iron prices and the more independent attitude of makers. There is some talk of advances in the Virginia district. Orders taken have been especially heavy among eastern Pennsylvania producers, one leading house reporting sales of about 125,000 tons during the past two months. An eastern steel works is in the market for 25,000 to 30,000 tons of basic for first quarter. Finished conditions among eastern mills are changing slightly. Reports of price shading are numerous. Scrap dealers are bullish, and are holding back material.

Pig Iron.—In practically all producing districts which have a bearing upon Philadelphia and adjacent territory, there is reliable evidence of accumulating strength in the market. Prices have continued to harden until they have become firm generally and the advisability of naming advances is being discussed, but thus far the only withdrawing of schedules and the marking up of quotations have applied to the southern district. One more important maker there withdrew its prices the past week, and the $10, Birmingham, price for No. 2 has become quite scarce. Some Virginia producers are inclined to follow the lead of southern makers and hold for advances, but the largest maker continues to quote $12.25 and $12.50, furnace, for No. 2 for third and fourth quarters, respectively. At present there are only six furnaces in blast in Virginia, there being one Low Moor, Princess, Pulaski, Buena Vista, Allegheney and one Virginia Iron, Coal & Coke stack, Radford having gone out. The present outlook is that an advance will be posted in Virginia iron before many weeks. Though the situation among the producers of eastern Pennsylvania shows little talk of advances, the position of the furnaces has considerably improved. One of the leading sellers in this territory has entered in new orders during the past two months about 125,000 tons in all grades, and as a result a number of eastern furnaces are booked practically full for the year. Shipments are going forward at a larger scale than production, and stocks are being cut into. The demand for foundry iron is good, the small sale continuing prominent. The best eastern Pennsylvania grades are being held at $15 to $15.25, Philadelphia, for No. 2X, but some less highly regarded brands are shading these figures, one lot of 500 tons for third quarter going to a stove manufacturer at $14.75, delivered. A machine tool builder took 500 tons for the rest of the year at full prices. A sale of 500 tons of 1.75 to 2.25 per cent silicon southern iron at $10, Birmingham, is reported. A cast iron pipe foundry in this territory put out this week an inquiry for 5,000 tons of No. 3 and forge for October and November shipment, and two other large makers of this class are negotiating, but not with fixed inquiries. Rolling mill forge of strictly standard grade is holding around $14.25 delivered. A sale of several thousand tons to an eastern mill for remainder of the year shipment was made this week at this figure. The basic market for next year is being tested out by the appearance of a large inquiry for 25,000 to 30,000 tons for first quarter by a Coatesville, Pa., melter, which came out in the week. Makers on 30,000 tons for first quarter are quoting cautiously on this inquiry, because of the extended delivery. Quotations as high as $15.75 to $16, delivered, have been entered, but the prospective buyer has stated he is not interested at over $15, delivered. The current market continues from $14.50 to $14.75, delivered, though it is possible for some plants with the lowest freight rate to get some iron a few cents under $14.50. A lot of several thousand tons for shipment up to October was closed this week at slightly less than $14.75, delivered, or a little above $14, furnace. This represents about $14.50, delivered, to most eastern steel works. Small sales of low phosphorus are being made upon the basis of $20.50, Philadelphia. Included in the sales this week were lots of 300 and 250 tons.

We quote for prompt delivery and for the balance of the year, as follows:

No. 1X foundry	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	14.50 to 15.00
Standard gray forge	14.00 to 14.25
Basic	14.50 to 14.75
No. 2X Virginia	15.05 to 15.30
No. 2 southern	14.00 to 14.50
Standard low phosphorus	20.50 to 21.00

Finished Material.—Extension of demand is not very apparent with eastern makers of finished lines. These mills on the whole are doing about as well as has been the case for the

past month, but in structural shapes there is some shrinkage of tonnage so far in August as against July. The tonnage in different lines booked in this territory in July, however, was the best for several months, and with some sellers the best of the present year.

Prices on steel bars seem to be a little firmer, some makers announcing they are holding strongly to 1.25c, Pittsburg. There are more reports of price easiness in plates and shapes in eastern territory, but it is difficult to establish the positive facts as to this cutting.

The number of structural jobs in the market has decreased. The Bethlehem Steel Co. will furnish 1,200 tons of shapes for the Industrial building, Baltimore, which will be fabricated by Lauer & Harper. The latter also have 150 tons for a Standard Oil Co. warehouse, Baltimore. The award of the 4,000 tons for the Old Dominion steamship piers at Norfolk is still held up. The government is asking bids on a considerable amount of plate girder work for the Panama canal, which will require 2,500 tons or more. The Post-Dispatch building, Richmond, is reported to have gone to the leading interest. Bids will be taken Aug. 14 on the Savannah hotel, Savannah, Ga.

Eastern locomotive builders are figuring on a large amount of work for delivery late this year or next year. This includes 55 locomotives for the Wabash.

We quote for delivery in Philadelphia and vicinity as follows:

Structural shapes, 1.50c; steel plates, 1.50c; steel bars, 1.35c to 1.40c; refined bar iron, 1.27c to 1.32c; cut nails, $1.75 to $1.80; blue annealed sheets, No. 10 gage, 1.65c; 4 x 4-inch open-hearth rolling billets, $24.40; forging billets, $28.40.

Old Material.—Because of a deadlocked condition between the mills and the dealers, little selling is being done, but prices are very firm and holders of material are bullish. Though consumers, especially in steel mills, apparently would be willing to purchase a large tonnage at today's schedule of prices, they are unable to do so because holders will not release the scrap on these terms. There is a good deal of speculating being attempted, and it is thought that there will be sharp competition in the pending railroad lists between interests going long on material and the consumers bidding direct. These lists, which are not as large as usual, will close within the week and include those of the Pennsylvania, B. & O., Reading, Lehigh Valley and Lackawanna. No. 1 railroad wrought and cast bearings are quotable a little higher.

We quote gross tons, delivered in eastern Pennsylvania and New Jersey consuming territory, as follows:

Old iron rails	$17.50 to 18.00
Old steel rails (rerolling)	14.25 to 14.75
No. 1 heavy melting steel	13.50 to 14.00
Old car wheels	13.00 to 13.50
Old steel car axles	18.50 to 19.00
Old iron car axles	24.00 to 25.00
No. 1 R. R. wrought	16.00 to 16.50
Wrought pipe	13.00 to 13.50
Cast borings	9.00 to 9.50
Wrought turnings	9.50 to 10.00
Heavy cast scrap	13.00 to 13.50
Railroad malleable	11.50 to 12.00
Stove plate	10.50 to 11.00

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa., and $1.20 to Harrisburg and Steelton, Pa.

BUFFALO

Limited Demand for Pig Iron, Principally From New England.

Aug. 7.

Pig Iron.—The market shows practically no change from last week. Only a fair amount of business is reported and little of that is from within the Buffalo district, a good part of the tonnage placed going into the New England field. There is not much inquiry, though the furnaces are of the belief that buyers understand that the firmer prices announced last week will be maintained. We quote f. o. b. furnace as follows:

No. 1X	$13.50 to 14.00
No. 2X	13.75
No. 2 plain	13.50
No. 3	13.50
Gray forge	13.00 to 13.25
Malleable	13.50 to 14.00
Basic	13.25 to 13.75
Charcoal	16.50 to 17.50

Finished Products.—Business in almost all lines is coming in very satisfactorily and prices continue firm at the figures that have prevailed for several weeks. Bars and shapes have been fairly active. The structural lettings for the week include three jobs calling for in the neighborhood of 120 tons each. Among the contracts on which figures will soon be asked is the new Bell telephone building, 15 stories, steel frame.

Old Material.—The scrap market has shown some slight improvement during the past week but the sales have been small, and in many lines there has been no interest whatever. The prices here quoted are largely nominal. We quote gross tons, f. o. b. Buffalo, as follows:

Heavy melting steel	$12.75 to 13.00
No. 1 railroad wrought scrap	14.75 to 15.25
No. 1 railroad and machine cast scrap	14.00 to 14.50
Old steel axles	18.50 to 19.00
Iron axles	23.00 to 24.00
Car wheels	13.75 to 14.25
Railroad malleable, scrap	13.75 to 14.00
Machine shop turnings	7.00 to 7.25
Cast iron borings	6.50 to 6.75
Low phosphorus steel scrap	17.00 to 17.50
Old iron rails	16.75 to 17.25
Tank iron	10.75 to 11.25
Sheet iron	6.50 to 7.00
Pipes and flues	10.75 to 11.25
Stove plate	12.00 to 12.50
Grate bars	11.50 to 12.00
Boiler plate	11.50 to 12.00

NEW YORK

Pig Iron Market Getting Stronger—Large Shipbuilding Prospects.

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., Aug. 8.

Iron Ore.—An eastern Pennsylvania furnace has bought 10,000 tons of a Canadian non-Bessemer ore at 7 cents per unit, f. o. b. Philadelphia. The ore is highly silicious. Apart from such scattered transactions, the market shows little activity. The natural result of lighter operations of eastern furnaces has been the scaling down in mining activity, especially in the Adirondack regions.

Pig Iron.—Accompanying the recent firming up of prices, which in some directions were very weak, has been the keener interest of consumers in negotiating for their requirements. This is continuing on a scale in different eastern markets that is lending considerable of an improvement in sentiment to the situation and eastern makers are viewing the outlook with a degree of encouragement. A general summary of conditions among eastern Pennsylvania and Virginia furnaces indicates that iron is being shipped more freely than it is being made and with production so curtailed, there are suggestions now being made that advances are not unlikely if the present attitude of buyers is prolonged. The improvement in the south, where additional makers this week have drawn away from the $10 price for No. 2, is helping to exert a beneficial influence on sentiment in the east. The $10 price for strictly No. 2 iron is relatively difficult to obtain. Some buyers are skeptical over these advances and are declining to make purchases at the higher level, which has scarcely been hardened by business done at these prices. A good many negotiations are now being carried on in metropolitan and adjacent territory, in which the small lot consumer is still in evidence. A New York stove maker is figuring on 2,500 tons of No. 2X for September to January delivery; a New Jersey foundry is out for 1,000 tons of Nos. 2 and 3 for ship-

ment this year. A pump interest is inquiring for 600 tons for eastern plants, and there are numerous small lots before sellers. A New England consumer has closed for 6,000 tons of basic for shipment over the year from Virginia furnaces. The basic market in that territory is holding at about $13, furnace. A railway equipment interest bought 500 tons of foundry iron for a western plant, taking Buffalo iron at $13.50, furnace, for 2X. A Connecticut consumer took 500 tons of malleable for third quarter at about $13.50, Buffalo furnace. The tidewater market in this territory on the best grades of eastern Pennsylvania foundry irons seems to be about $15.-25, for No. 2X, though there are certain brands which sometimes scale this to $15, tidewater, or slightly less than $14, furnace. Recent selling of Virginia iron at $12, furnace, for No. 2 seems to have disappeared and conditions in that district are perceptibly stronger. The quotations continue at from $12.25 to $12.50, furnace, for No. 2. Reports from Buffalo are that the market is holding firmly to $13.50, furnace, for 2X. We quote for prompt and third quarter shipment, as follows:

Northern foundry No. 1	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	14.50 to 14.75
No. 2 Virginia	15.05 to 15.30
No. 2 southern foundry	14.00 to 14.50
Malleable	15.00 to 15.25
Gray forge	14.00 to 14.25

Ferro-Alloys.—A New Jersey consumer closed this week for its requirements of ferro-manganese throughout next year, aggregating from 1,800 to 2,400 tons at $37, seaboard. This is the largest transaction known to have been made since the recent advance. It develops that just before makers put up their prices to $37, two weeks ago, an eastern Pennsylvania steel works was able to cover for its 1911 requirements, totaling about 1,800 tons, at less than $36.50, seaboard. An inquiry for 500 tons for first half shipment is current from the west. On some recent small lot business in 50 per cent ferro-silicon in the east, prices have ranged from $52.50 to over $60, delivered. Some of the largest buyers are under contract running into next year at $53, Pittsburgh. We quote 80 per cent ferro-manganese at $37, Baltimore, and 50 per cent ferro-silicon at from $52.50 to $53.50, Baltimore.

Cast Iron Pipe.—Bids are going in today on 1,700 tons, chiefly 60-inch, for New Bedford, Mass. It is not expected that there will be any re-bidding on the 11,000 tons for Detroit, upon which tenders were recently rejected. It is thought that this business will eventually go to a local maker there. The United States Cast Iron Pipe & Foundry Co. has taken 300 tons for Athol, Mass. Conditions in the market are changing only slightly and there is still considerable complaint among makers over the volume of business and the low level of current prices. We quote 6-inch pipe at from $21 to $21.50, f. o. b. New York.

Finished Material.—While the recent improvement in the market is being very well sustained, there are no appreciable gains to be noted in the eastern district. A smaller volume of business is coming out in some lines, but on the whole the tonnage entered is about on an even basis. There is some irregularity still to be noted in steel bars, but leading producers insist that a more faithful effort is being made to hold at 1.25c, Pittsburgh, and that the regular run of the market's business is being taken at this price. Reports of shading continue in other finished lines.

One of the most promising features of the market is the unusually large amount of proposed shipbuilding along the eastern coast, which is said to be of an extent not equaled in many years. One shipbuilding interest states that it is figuring at present on 16 different vessels of assorted types, most of which are merchant craft, as but two government colliers are included. Among the others are four large boats for the American-Hawaiian Steamship Co., and a large steamer for the Hudson River Day Line. The steel requirements of these boats are roughly estimated at upward of 50,000 tons. As has been pointed out, the approach of the completion of the Panama canal is given as one of the important reasone for this stimulating of shipbuilding interest in the east. In addition to the 16 vessels considered, there is a considerable amount of additional government work in sight. Bids were taken at Washington yesterday on eight torpedo boat destroyers, on which Wm. Cramp & Sons' Ship & Engine Building Co. offered the lowest bid for four boats, and other shipyards made offers to build one or two each. The Carnegie Steel Co. will furnish the shapes and the Worth Bros. Co. the plates for the two government colliers recently awarded the Newport News Shipbuilding & Dry Dock Co. The steel requirements, about 11,000 tons, are about equally divided in the two products.

New structural inquiry in the eastern market is less active. The Geo. A. Fuller Co., which in the week was awarded the general contract for the Kansas City Union station and terminals, is taking figures on the steel requirements, about 14,000 tons. This same contractor took the Carlton hotel, Montreal, requiring 2,000 tons. Bids go in Aug. 10 on 600 tons of plates and shapes for the new Manhattan Bridge terminal, this city. In addition, a considerable amount of reinforcing bars will be required. The contract for the Bingham Memorial hospital, Boston, has gone to Wells Bros., and the fabrication of the steel, about 1,000 tons, is expected to go to the American Bridge Co. Among the other awards of the week were the McKeon loft on Twenty-fifth street, 1,200 tons, to the A. E. Morton Co.; the Cambridge apartment, Seventy-eighth street and West End avenue, 800 tons, to Ravitch Bros.; and apartments at Ninety-first street and Central Park West and 143d street and Broadway, requiring 700 and 600 tons, respectively, to the Hinkle Iron Works. James Stewart & Co. have the general contract for a new academy building at West Point, about 900 tons, and Cramp & Co. for a theater on West Forty-eighth street, this city, about 300 tons. We quote, gross tons, prices New York dealers will pay at tidewater, with the exception of cast scrap, which has a local demand, as follows:

Angles, 3 to 6 inches and heavier, 1.51c; tees, 3 x ¼ inch and heavier, 1.51c; plates, tank, carload, 1.51c; boiler steel, 1.61c; marine boiler, 1.91c; bar iron, 1.30c to 1.35c; soft steel bars, 1.36c to 1.41c.

Rails and Track Material. — The Southern railroad has placed with the Tennessee Coal, Iron & Railroad Co. an order for 21,000 tons of open-hearth rails. The Central Railroad of Havana has placed a recent order with the Maryland Steel Co. for 4,000 tons of Bessemer rails. Some other business has been practically closed in the east, but is not yet ready for announcement.

Old Material. — The market has reached a halting stage, as neither buyers nor holders of scrap are willing to commit themselves very far until they are more certain whether prices are due to a sharp advance or whether the present stronger sentiment represents only a speculative flurry. Owners of material are selling only in small lots, expecting a rise, but consumers are not yet willing to pay advances, though prices seem to have hardened materially at the present levels. In heavy melting steel, there would probably be little trouble encountered in selling round blocks to the eastern steel works at $13.50, delivered, but sellers are cautious to deal at this figure. As a result, there

is little buying of any kind being done, and brokers are having difficulty in getting material to ship on old contracts. Wrought pipe shows a fair demand. We quote gross tons, prices New York dealers will pay at tidewater, with the exception of cast scrap, which has a local demand, as follows:

Old car wheels	$10.75 to 11.00
Old iron axles	17.50 to 18.00
Old steel shafting	15.00 to 16.00
No. 1 heavy melting steel	11.00 to 11.25
No. 1 R. R. wrought	13.50 to 14.00
Iron track scrap	12.50 to 13.00
Wrought pipe	10.25 to 10.50
Cast borings	6.50 to 6.75
Wrought turnings	6.75 to 7.25
Heavy cast scrap	11.50 to 12.00
Railroad, malleable	10.00 to 10.50
Stove plate	8.75 to 9.00
Grate bars	9.00 to 9.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York, and to Roebling N. J., $1.00 from Jersey City and $1.50 from New York.

ST. LOUIS

Pig Iron Sales Are Confined to Small Lots.

Aug. 7.

Pig Iron.—Transactions in pig iron last week were confined to small purchases, except one sale of 500 tons of Lake Superior charcoal iron, reported in THE DAILY IRON TRADE REVIEW on Monday. The only inquiry on the market of consequence is the one for 10,000 tons of basic, which has been out for several weeks. Prices have not changed, and while some furnaces are holding out for $11 for southern No. 2, Birmingham basis, it is easy to obtain $10.50 iron, and even that figure might be shaded. Prices, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$14.25 to 14.75
Southern No. 2	13.75 to 14.25
Southern No. 3	13.50 to 14.00
Southern No. 4	13.25 to 13.75

Coke.—The market for coke was enlivened by a sale of 6,000 tons of foundry grades the latter part of the week for shipment over the whole of next year. Inquiries for coke are coming in for small shipments only.

Finished Material.—Rumors are rife in St. Louis of a cut of $1 a ton on structural material, but this is denied by some of the large interests. Very little business was done last week in structural material, but the time is drawing near for the letting of contracts for steel for the approaches to the municipal bridge over the Mississippi river, and also for the 22-story department store and office building to be erected on the entire block now occupied by the Barr Dry Goods Co. One order for 2,500 tons of standard rails was placed last week, and several orders were placed for small tonnages of light rails. Business seemed to have come to a temporary standstill for angle bars and track fastenings.

Old Material.—Prices for scrap remain unchanged as follows, with very little business reported:

Old car wheels	$12.50 to 13.00
Old iron rails	13.50 to 14.00
Rerolling rails (4 ft. and over)	12.00 to 12.50
Old steel rails (2 ft. and under)	11.00 to 11.50
Light section relayers, 45 lb. and under, subject to inspection	19.50 to 22.00
Relaying rails, subject to inspection	24.00 to 24.50
Frogs, switches and guards	11.50 to 12.00
Heavy melting steel	11.50 to 12.00
Shoveling steel	11.00 to 11.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.00 to 11.25
No. 2 R. R. wrought	10.00 to 10.25
Arch bars and transoms	13.25 to 13.50
Knuckles, couplers and springs	12.00 to 12.50
Shafting	14.25 to 14.50
Iron car axles	18.00 to 18.50
Steel car axles	17.00 to 17.50
Locomotive tires	14.00 to 14.50
No. 1 country wrought	9.50 to 10.00
Pipes and flues	8.00 to 8.50
No. 1 busheling	9.25 to 9.50
No. 2 busheling	6.00 to 6.50
Cast and mixed borings	5.00 to 5.50
Machine shop turnings	6.50 to 7.00
Railroad malleable	9.50 to 10.00
Agricultural malleable	8.50 to 9.00
Stove plate	9.00 to 9.50
Angle splice bars, iron	11.75 to 12.25
Angle splice bars, steel	11.00 to 11.50

BIRMINGHAM

For Southern Delivery and Apparently Adhered to.

Birmingham, Ala., Aug. 7.

Pig Iron.—A schedule of $10.50 per ton, Birmingham, for No. 2 foundry has been established as applicable to deliveries within the next 60 to 90 days. The sales effected so far at the schedule mentioned are comparatively small in the aggregate, but producers generally manifest an attitude of indifference as to additional commitments at the figures ruling and the basis recently adopted will no doubt be maintained. In this connection it is noted that three of the leading producing interests have no tonnage to offer for shipment within the remainder of the third quarter and are not preparing to increase their output.

Old Material.—The demand during the past week was of a very desultory nature and prices received are very much at variance. With the scarcity of low grade pig iron and the consequent advance in price for such grades, there is more demand for machinery and country cast scrap, but the movement of steel grades continues very light. A small tonnage of light re-laying rails was sold during last week at prices in line with those quoted.

METAL MARKETS

New York

Aug. 8.

Tin.—The London metal exchange did not open Monday, it being a bank holiday, and the New York market was quiet in the absence of foreign tin quotations. Interests which have controlled the tin market abroad since 1909, used the day to advantage, however. Early cables showed that spot had advanced £2 15s and futures £1 5s from Friday's closing. Toward the end of the day both positions declined slightly, and closed steady, spot at £194 5s, and three months at £189. The advance in London stimulated interest in the New York market and a good total of business has been done on the New York metal exchange, 50 tons of August, and 25 tons October were sold early in the day at 42.75c and 42c, port of New York, respectively. In the outside market, later spot tin sold at 43c.

Notwithstanding the heavy arrivals in July and for the first week in this month, the metal is scarce here and a premium of ½c is being asked for early deliveries.

Arrivals since Aug. 1 aggregate 1,628 tons and there are 1,415 tons afloat. The next steamer from London is scheduled to sail Aug. 12, and will arrive here about Aug. 25.

Copper.—Expectations of a good report on the July conditions of the copper producing industry, were fully realized today when the figures of the Copper Producers' Association were published. Production showed a reduction of 12,386,378 pounds compared with the previous month. Stocks in the United States were reduced 19,695,306 pounds. There was a falling off of about 12 per cent in the domestic deliveries compared with June, but that is not considered excessive. The market for the metal has been firm. Electrolytic is held at 12.62½c cash New York, and 12.75c delivered 30 days, and lake is 12.75c to 12.87½c. Copper exports since Aug. 1, are 5,660 tons.

Lead.—Market conditions are unchanged from last week, except that the bid has been lowered to 4.45c in New York. All independent interests are asking 4.60c however. The leading interest continues to quote 4.50c for shipments.

Spelter.—A further advance of 10 points is noted in the market this

week, and spelter is now 6c in New York.

Antimony.—Demand has been better the past week but prices are still soft. Cookson's is 8.50c, Hallett's is 7.75c and Hungarian is 7.20c.

St. Louis

Aug. 7.

Lead and Zinc.—A price of $39 to $42.50 was paid for zinc blende in the Missouri-Kansas-Oklahoma district last week on a basis of 60 per cent metallic contents. As a result of the strike at the American Zinc, Lead & Smelting Co.'s plants in Dearing and Caney, Kas., no trading was done on contract basis, which probably would have been $44.44 figured on the average spelter price of 5.64c at East St. Louis for the previous week. The continued rains have caused several mines to cave in and others to be flooded. Calamine sold for $22 to $24 a ton, and lead brought $58 to $61 a ton.

Chicago

Aug. 7.

New Metals.—The market is quiet and inquiries are limited to small lots for prompt shipment. Buyers are taking but little interest as far ahead as September delivery and the large consumers are apparently covered for their requirements. Spelter is a little higher, but this is due chiefly to floods which have restricted production.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 13c; casting, 12¾c; smaller lots, ¼c to ⅜c higher. Spelter, car lots, 5.90c to 5.95c, lead, desilverized, 4.47½c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $7.50 list. f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 43½c; Cookson's antimony, 10c; other grades 9c to 10c.

Old Metals.—The market is very dull and there is not enough trading to make any change in prices. Foundries are buying only small lots for current needs.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, 12½c; heavy copper, 12c; light copper, 10½c; heavy red brass, 10½c; heavy yellow brass, 9¼c light brass, 7c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 7½c; brass clippings, 8½c; tea lead, 3.80c; lead scrap, 4½c; zinc, 4½c; tin pipe, 39½c; tin foil, 38c; pewter, 27c; electrotype plates, free from wood, 4c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; linotype dross, 3¼c; prime slab zinc dross, $70 per ton.

JULY SHIPMENTS

Of Lake Superior Ore Passed 5,000,000-Ton Mark.

The movement of ore during July passed the 5,000,000-ton mark, being 5,221,373 gross tons. This is quite a respectable movement and shows with what ridiculous ease the trade is managed, as there was no perceptible strain on shipping or receiving docks, while hundreds of ships were unable to get cargoes. In fact, this movement was almost entirely done in contract vessels. The movement is, however, 1,723,916 tons less than it was for July, 1910. The movement to Aug. 1, 1911, was 14,064,291 tons, as against 21,863,549 tons for the corresponding period during 1910, a decrease of 7,799,258 tons.

During the past fortnight furnace men have not come into the market in the way that was expected and ore sales have been inconsiderable. The August movement will probably be less than that of July.

Port.	July, 1910.	July, 1911.
Escanaba	725,123	644.098
Marquette	573,632	309,438
Ashland	718,309	439,843
Superior	1,262,468	1,747,364
Duluth	2,344,226	1,108,316
Two Harbors	1,321,531	972,314
	6,945,289	5,221,373
1911 decrease		1,723,916

Port.	To Aug. 1, 1910.	To Aug. 1, 1911.
Escanaba	2,464,859	1,711,806
Marquette	1,723,877	843,177
Ashland	2,233,864	1,102,263
Superior	3,895,303	4,698,855
Duluth	7,441,488	3,158,450
Two Harbors	4,104,158	2,549,740
	21,863,549	14,064,291
1911 decrease		7,799,258

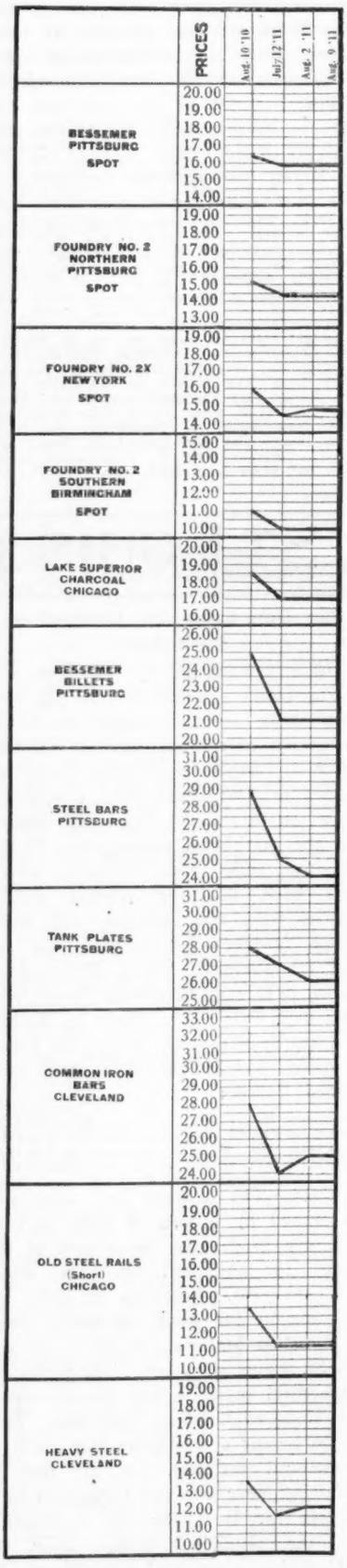
Lake Erie Receipts.

Of the total movement of 5,221,373 gross tons of ore moved during July, 4,046,190 tons came to Lake Erie ports, distributed as follows:

Port.	July, 1911.
Buffalo	539,943
Erie	9,094
Conneaut	1,154,268
Ashtabula	884,198
Fairport	122,637
Cleveland	776,571
Lorain	442,516
Huron	48,894
Sandusky	.....
Toledo	55,621
Detroit	12,448
Total	4,046,190

The Tea Tray Co., Newark, N. J., announces that Albert S. Marten, former president of that company, has retired, and that G. A. Krutt-schnitt, former president of the Aluminum Goods Mfg. Co., has been chosen as Mr. Marten's successor.

PRICE CHART



Striking Character in Early Steel Works Mergers

Death of John W. Gates at Paris Hotel After Vigorous Battle With Illness—Sketch of His Career

John W. Gates, dominant factor of the Republic Iron & Steel Co., and of the Texas Co., died Wednesday morning, Aug. 9, at 5:10 o'clock at the Hotel Meurice, Paris. For many weeks, Mr. Gates has struggled against the inroads of kidney disease, and when, thanks to his iron constitution and splendid courage, he began making progress toward possible recovery, he was attacked by pneumonia. For the last several days, he was kept alive by the use of oxygen. His wife and son, Charles G. Gates, were with him when he died.

The last appearance of Mr. Gates in public was on Saturday, May 27, when at Washington he took the witness stand as the first witness before the Stanley house committee investigating the United States Steel Corporation. Shortly after that, he left on an European trip and several weeks afterward he was stricken by illness in the Paris hotel where he was stopping.

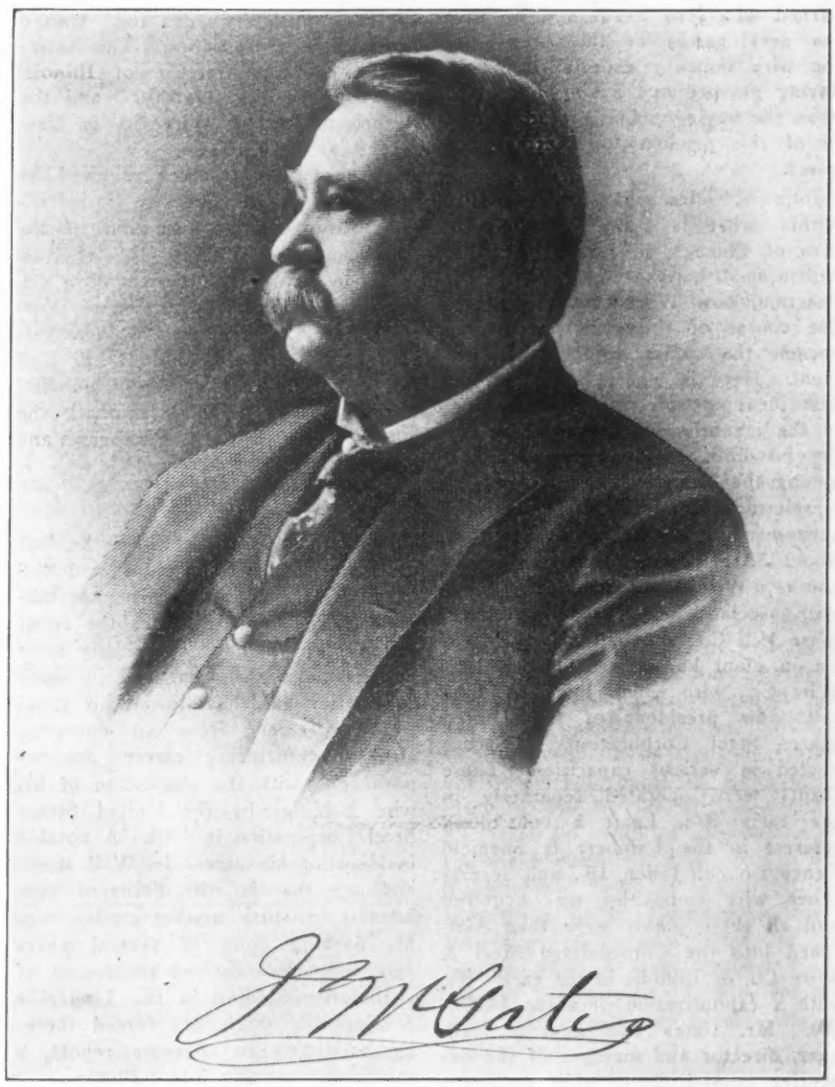
The reply which Mr. Gates made to the final questions of members of the Stanley committee, the reply with which he concluded his testimony, was characteristic of Mr. Gates throughout his very active business life. Mr. McGillicuddy had asked as to what was the purpose that actuated Mr. Gates in aiding or suggesting the formation of the United States Steel Corporation, and Mr. Gates' reply was:

"To convert a lot of doubtful assets into cash—which I have succeeded in doing, because I was aware of the fact that there would be a big market for Corporation shares, and if I wanted to sell them I could, based upon the broad market for them that would be created because of the gentlemen connected with that Corporation."

Sketch of His Life.

No character connected with the steel industry has been more illustrative of the power of a dominating personality or one representing such dashing success on a large scale as that of John W. Gates. Whether or not it was really he who first conceived the idea of a large combination of steel companies in different lines of production, such as today is embodied in the United States Steel Corporation, it remains that he, with his associates, evolved the germ of the plan of consolidation in the steel wire business. By consolidating single plants and merging these combinations, Mr. Gates and his co-partners placed the wire business of the country in so few hands that its subsequent merging in the United States Steel Corporation was to a great extent a formal action. At the time of its being taken over by the American Steel & Wire Co., of New Jersey, the subsidiary interest of the Steel Corporation, the American Steel & Wire Co. of Illnois controlled about 80 to 85 per cent of the wire production of the United States.

In the estimation of those who have been associated either directly or indirectly with him, or are familiar with the conditions of the steel trade of several decades ago, Mr. Gates stood as one of the greatest salesmen of steel products this country has ever known. He achieved remarkable success when a very young man as a salesman of wire products, especially in Texas and southern territory, and it was his appreciation of the possibilities of the wire business that caused him, several years later, to acquire an interest in a plant of this



character and subsequently to work out by degrees a plan of combining this business of the country into one corporation. In his salesmanship, he combined the two traits of his character that stand out most strikingly—those of a compelling and genial personality, and of a stalwart tenacity and determination in the face of difficulties. It is related that after he became a manufacturer at St. Louis when business was dull he would load up a train of wire products and ship them to Texas, take a fast train to that destination and before the shipment had arrived, would have disposed of the whole consignment. He was among the first to introduce barbed wire into Texas and he gave the development of this branch of the wire industry especial attention, having grasped and having impressed upon the buying public the adaptability of this product for fencing purposes.

John W. Gates began life on a farm within what is now the suburban area of Chicago, in 1855. His father kept a small hardware store at Turner Junction, now West Chicago, and in due course of time the young man became the owner of this establishment. Here is where he gained his first ideas of salesmanship. Learning of the invention of barbed wire, and the possibilities of a market for it among the Texas ranches, he became a salesman in 1874 and met with phenomenal success in that territory. About 1880 he became interested in the Southern Wire Co., of St. Louis. Then with associates, he acquired the St. Louis Wire Mill Co., and built at Braddock, Pa., a plant known as the Braddock Wire Co., with which James A. Farrell, now president of the United States Steel Corporation, was connected in various capacities. These plants were operated separately in the early 80's. Later a controlling interest in the Lambert & Sheffield Fence Co., of Joliet, Ill., and several other wire companies was acquired and all these plants were then combined into the Consolidated Steel & Wire Co. of Illinois, in the early 90's, with a capitalization of about $4,000,000. Mr. Gates was general manager, director and member of the executive committee of this company. With the Consolidated Steel & Wire Co. as a nucleus of a combination of the wire manufacturing plants, efforts were expended to bring other plants within the control of one corporation. In this way, 40 or 50 different wire-making establishments were acquired singly, beginning with the Washburn Wire Co., in Worcester, Mass., and extending over all the country. These plants were not all acquired directly by the Consolidated Steel & Wire Co. Some of them were purchased by Mr. Gates himself, and others by Col. I. L. Elwood, of Elwood, Ind., recently deceased. They were amalgamated in 1898 into the American Steel & Wire Co. of Illinois, of which Mr. Gates was chairman of the board and continued so until its absorption by the American Steel & Wire Co. of New Jersey. The Consolidated Steel & Wire Co. was absorbed by the American Steel & Wire Co. of Illinois, and the American Steel & Wire Co. of Illinois, was finally merged into the American Steel & Wire Co. of New Jersey. present subsidiary of the United States Steel Corporation. The American Steel & Wire Co. of Illinois, was capitalized at $24,000,000 and the American Steel & Wire Co. of New Jersey at $90,000,000.

Among the companies acquired by the American Steel & Wire Co. of Illinois prior to the formation of the American Steel & Wire Co. of New Jersey, were the Worcester Wire Co. and The Washburn Mfg. Co., of Worcester, Mass.; the Cleveland Wire Co., American Wire Co., and H. P. Nail Co., of Cleveland; the Cincinnati Barbed Wire Co., of Cincinnati, the Oliver Wire Co., of Pittsburg, and many others.

Was Quick to Act.

His quickness to act when he had determined upon his plans and the usually large scale of his undertakings, gained for Mr. Gates the reputation of a "plunger," especially after he became actively engaged in stock speculation, which followed his practical retirement from an energetic steel manufacturing career, contemporaneous with the absorption of his wire holdings by the United States Steel Corporation in 1901. A notable incident of his career in Wall street and one that is still discussed with interest in stock market circles, was his dashing coup of several years ago, when he acquired possession of a majority holding in the Louisville & Nashville stock and forced thereby, according to common report, a settlement running into millions.

In recent years, Mr. Gates had been largely interested in the development of the steel industry in the south, and also was a heavy investor in the oil fields of Texas. He was a member of the syndicate that acquired control in 1905 of the Tennessee Coal, Iron & Railroad Co. previous to its sale to the United States Steel Corporation. At the time of his death, he was the largest holder and a member of the executive committee of the Republic Iron & Steel Co. Mr. Gates had claimed residence in Texas in recent years.

A well known manufacturer of iron and steel with a wide acquaintance among those who have been important factors in the development of the business of the country, said a few days ago of Mr. Gates:

"As a constructionist and as a business builder, John W. Gates has never had a superior in America. He was to business and especially to the iron and steel business what that remarkably dominating and far-seeing man, J. P. Morgan, is to finance. He saw the opportunities in the steel business before any one else in the way of producing the greatest results by combining similar interests and he had the courage and the ability to carry out his plans.

"Had it not been for an instinctive desire on his part to take risks and accept chances that led him rather into the field of speculation, no one can tell what he might not have accomplished. His was a dual personality. Had the legitimate business side been developed to the exclusion of the other, no one can even suggest what great things he might have done."

Copper Producers' Figures for July

The monthly report of the Copper Producers' Association giving production and consumption of copper in the United States in July as compared with June and with July last year, together with the stocks on hand at the end of the month follows, the figures being given in pounds:

	July, 1911.	June, 1911.	July, 1910.
Stks pr. mo.	157,434,164	165,995,932	168,386,017
Production	112,167,934	124,554,312	118,370,003
Total	269,602,098	290,550,244	286,756,020
Dom. deliv.	56,982,582	61,655,561	56,708,175
Exports	74,880,658	71,460,519	59,407,167
Total cons.	131,863,240	133,116,080	116,115,342
Stks. rem'g.	137,738,858	157,434,164	170,640,678

The sales offices of the Republic Iron & Steel Co. will be removed from Pittsburg to Youngstown, O., Aug. 11, and it is expected that the executive, operating and purchasing offices will be moved on the following Saturday and Monday.

The Tennessee Coal, Iron & Railroad Co. blew out No. 4 Bessemer stack on July 1, but relighted No. 3 Bessemer on July 5, No. 1 Ensley on July 13, and No. 5 Ensley on July 9.

Merchant Furnaces Continue Output Curtailment

Daily Average Production Nearly 2,000 Tons Less in July—More Steel Plant Stacks Are Active

Further curtailment of the production of coke and anthracite pig iron in July by the merchant furnaces of the country is shown in the complete returns for that month. The total production in July was 1,773,865 tons, compared with 1,773,282 tons in June, a net increase in July of only 583 tons, although July had one more working day than June. The July output, compared with the output in May of 1,871,388 tons, shows a decrease of 97,523 tons, both months having the same number of working days. The daily average production in July was 57,221 tons, compared with 59,109 tons in June, a decrease in the daily average of July of 1,888 tons.

MONTHLY PRODUCTION.

	1911.	1910.	1909.
January	1,766,658	2,599,995	1,788,164
February	1,781,285	2,428,937	1,682,470
March	2,165,764	2,583,736	1,822,644
April	2,044,904	2,477,700	1,730,608
May	1,871,388	2,374,802	1,866,757
June	1,773,282	2,282,279	1,930,029
July	1,773,865	2,158,124	2,088,620
August		2,103,791	2,232,642
September		2,048,461	2,375,589
October		2,086,205	2,604,037
November		1,910,385	2,532,740
December		1,779,899	2,682,702
Total	13,177,146	26,840,314	25,337,002

The production by merchant stacks in July was 420,397 tons, compared with 473,785 tons in June, a decrease in July of 53,388 tons. On the other hand, the non-merchant or steel plant stacks, increased their output, the total production of non-merchant iron in July being 1,326,360 tons, compared with 1,273,247 tons in June, an increase in July of 53,113 tons. This increase of steel plant furnace activity is further shown in an analysis of the figures pertaining to stacks blown in and out. The total number of stacks blown out in July was 22, while the total number of stacks blown in during the same month was 14, making a net total of 8 blown out in July as compared with June. Of the total of 22 stacks blown out in July, 16 were merchant stacks and six were non-merchant; of the stacks relighted, in July, three were merchant and 11 were non-merchant. In other words, a net of 13 merchant stacks was blown out in July, while a net of five non-merchant stacks was relighted in that month. On the last day of July 194 stacks were blowing; on the last day of June, 202 stacks; and on the last day of May 206 stacks; so that July had 8 fewer stacks blowing than June, and 12 fewer stacks than May.

AVERAGE DAILY PRODUCTION.

	1911	1910.
January	56,989	83,871
February	63,617	86,747
March	69,863	83,580
April	68,163	82,590
May	60,367	76,607
June	59,109	76,276
July	57,221	69,617
August	.....	67,864
September	.....	68,282
October	.....	67,297
November	.....	63,679
December	.....	57,192

In only two states were more stacks blowing on the last day of July than June; Pennsylvania increased its number of active stacks by two, one being the new Bethlehem stack, while Alabama increased the number by one. The following states showed decreases in the number of active stacks on the last day of July: Ohio three, although a new Haselton stack was added to the active list; Virginia three, New York two and New Jersey, Kentucky and Missouri one each.

The production of spiegel in July was 18,090 tons, compared with 19,141 tons in June, a decrease in July of 1,051 tons. The output of ferro in July was 9,018 tons, compared with 7,109 tons in June, an increase in July of 1,909 tons.

The Pittsburg Steel Co. has authorized the construction of four additional open-hearth steel furnaces at its Monessen, Pa., works, where it now has eight open-hearth steel furnaces. Contracts for six or eight new open-hearth steel furnaces to be built at Midland, Pa., by the Pittsburg Crucible Steel Co., will be awarded within the next three or four days. The Youngstown Sheet & Tube Co. has authorized Julian Kennedy, engineer, Pittsburg, to prepare plans for six new open-hearth steel furnaces to be built at Youngstown, O. Bids for this work likely will be asked early in September.

The Lackawanna Steel Co. is now operating three of its seven blast furnaces at Buffalo. The new merchant bar mill of the company has not yet been placed in operation, but will be in a short time.

The Warwick Iron & Steel Co. relighted its No. 2 stack on July 27.

JULY PIG IRON REPORT.

STATES.	NO. OF STACKS.		NO. IN BLAST LAST DAY OF MONTH.		TOTAL TONNAGE MAKE.		TOTALS.	
	July.	June.	Merchant.	Non-Merchant.	July.	June.
Pennsylvania	158	81	79	90,492	611,955	702,447	693,811
Ohio	72	33	36	78,732	286,565	365,297	407,666
Alabama	45	17	16	97,257	27,328	124,585	115,206
Virginia	24	6	9	20,275	———	20,275	22,601
New York	27	13	15	59,261	66,866	126,127	131,840
New Jersey	7	0	1	1,386	———	1,386	3,600
Illinois	26	16	16	19,056	178,628	197,684	166,770
Colorado	6	3	3				
Indiana	8	6	6	5,017	129,302	134,319	130,190
Maryland	4	3	3				
Wisconsin	6	1	1				
Kentucky	7	1	2				
West Virginia	4	3	3	32,655	25,716	58,371	58,321
Tennessee	18	8	8				
Washington	1	0	0				
Georgia	2	0	0				
Texas	3	0	0				
Minnesota	1	1	1	16,266	———	16,266	17,027
Michigan	3	2	2				
Missouri	1	0	1				
Spiegel—All states.						18,090	19,141
Ferro—All states.						9,018	7,109
Totals	423	194	202	420,397	1,326,360	1,773,865	1,773,282

BASIC BOUGHT

At Low Price by Colonial Steel Co.—Sanitary Company in Market.

Pittsburgh, Aug. 9. (By wire.)

The Colonial Steel Co., Pittsburgh, has closed for its full requirements of basic pig iron over the remainder of the year, approximately 7,500 tons. It is evident that the business was placed at a figure not above $13, valley, although firm offers of moderately heavy tonnage did not develop a price this low during the week. The freight rate from the valley is 60 cents, while a nearby furnace has a rate of 45 cents.

The Standard Sanitary Mfg. Co., Pittsburgh, has entered the market for about 6,000 tons of Nos. 1, 2 and 3 foundry pig iron for fourth quarter delivery at its Northside, Pittsburgh, and New Brighton, Pa., plants.

The report that the Kokomo Iron & Steel Co. has made a contract with an Ohio steel company for 40,000 tons of billets is denied. It is understood that this business has not been placed.

Personal

F. A. Scott, secretary and treasurer of the Warner & Swasey Co., Cleveland, has left for a trip abroad. He will return about Oct. 1.

P. McGrath, formerly superintendent of the Peck Bros. Co., New Haven, Conn., has been appointed superintendent of the E. Stebbins Mfg. Co., Springfield, Mass.

E. D. Nelson, engineer of tests for the Pennsylvania railroad since 1903, with headquarters at Altoona, Pa., has resigned that position and retired from the service of the road.

Edwin S. Harrison, former sales engineer of the Busch-Sulzer Bros. Diesel Engine Co., St. Louis, has become resident engineer of the new plant of the Bucyrus-Vulcan Co., Evansville, Ind.

Arthur W. Richards, iron and steel works consultant and metallurgist, has opened offices at Army and Navy mansions, 109 Victoria street, London, S. W., and is open to represent suitable firms in London.

Frank G. Payson, for the past six years traveling mechanical expert for the Niles-Bement-Pond Co., New York City, has been appointed western representative for the Union Petroleum Co., Philadelphia. Mr. Payson's headquarters will be in Chicago.

E. A. S. Clarke, president of the Lackawanna Steel Co., has returned after having spent several months in England and continental Europe. Mr. Clarke was present at the Brussels conference of steel makers as one of the delegates of the industry of the United States.

E. F. Millett, formerly general manager of the E. Stebbins Mfg. Co., Springfield, Mass., has resigned and is now associated with his brother in the Millett Brass Co., Springfield, Mass. J. Bisscher succeeds Mr. Millett as general manager of the E. Stebbins Mfg. Co.

W. H. Whiteside, formerly president of the Allis-Chalmers Co., Milwaukee, has been made president and director of the Stevens Duryea Co., of Chicopee Falls, Mass. Mr. Whiteside fills the vacancy caused by the resignation of Irving H. Page, who retires to become chairman of the board and treasurer of the company.

W. J. Cunningham has been appointed foreman of the Florence Co., Florence, Mass., to succeed J. H. Cunningham, who died recently. W. J. Cunningham was formerly with the Norwood Engineering Co., Florence, Mass., and for several years was assistant to R. P. Cunningham, superintendent of the Deane Steam Pump Co., Holyoke, Mass.

Robert E. Brooke, treasurer of the E. & G. Brooke Iron Co., Birdsboro, Pa., and manager of its blast furnace department, left Aug. 7 for Sweden, to be gone until the latter part of December. He was accompanied by Albert Broden, superintendent of furnaces of the Reading Iron Co., Reading, and Edgar Cook, of the Warwick Iron & Steel Co., Pottstown, and will investigate the Swedish ore situation.

Death of I. A. Kelly

Ironton A. Kelly, president of the Ashland Steel Co., Ashland, Ky., and also vice president of the Kelly Nail & Iron Co., of Ironton, O., and vice president of the Commercial Bank & Trust Co., Ashland, died at his home in Ashland, Aug. 6, aged 62, from a complication of heart trouble. He was formerly president of the Kelly Nail & Iron Co., but for the past 21 years had been president of the Ashland Steel Co. He was in poor health for the last three years, but it was only during the last few months that he was away from active business. Mr. Kelly was the pioneer in the iron development of the Hanging Rock-Ironton-Ashland district, a man of very marked ability and very widely known and long identified with the iron and steel trade of the United States. The funeral was held Wednesday from his late home in Ashland.

CANADIAN CONSUMER

Buys Plates and Shapes—Quebec Bridge Requirements.

New York, Aug. 9. (By wire.)

In both new orders entered and in shipments, July was the heaviest month of the year for the Steel Corporation, but, despite large outgoing tonnage, unfilled orders, it is estimated, will show an increase of about 250,000 tons. There is so much pressure put upon the Carnegie Steel Co. that two Edgar Thomson and one Clairton have been added to the active list this week. Tube business is improving.

Export trade is holding up very strongly. The leading interest has taken 16,000 tons of plates and shapes from a Canadian consumer and revised specifications of the Quebec bridge will direct an additional 14,000 tons to mills in this country for this work, bringing the total to about 65,000 tons. A western line has placed an order for 20,000 tons of rails, but details are lacking.

Obituary

Announcement has been made from Chicago, of the death of B. M. Lebby, president of the National Commissary Managers' Association, on July 28.

James Wilson, for 30 years a salesman for the Sligo Iron Store Co., of St. Louis, was found dead in bed in his home in Alton, Ill., Aug. 6, aged 70.

Robert D. Watson, aged 52, died July 31, in the Southside hospital, Pittsburg. Mr. Watson was a member of the firm of Watson Bros. and the Watson Tank Co., of Washington and Pittsburg.

Samuel Stevenson, aged 82, president of the Stevenson Co., of Wellsville, O., manufacturer of brick and sewer pipe machinery, died Aug. 2, at his home in Wellsville. Mr. Stevenson was one of the pioneer machinery men of that section, having been identified with that industry in some form or another since 1842.

The death of Henry G. Trout, president of the H. G. Trout Co., Buffalo, occurred July 22 while he was visiting friends in Brooklyn preparatory to continuing on a trip to Halifax. Within the past year he had been stricken several times with pneumonia, becoming weaker with each attack. But during the past two months he had gained strength and had planned the Halifax recreation trip. Mr. Trout was a pioneer manufacturer of steamship propellers.

A Special Coal-Handling Gantry Crane

The Crane was Designed to Unload Coal from Cars and Commands Four Railroad Tracks – Details of Construction

The Toledo Bridge & Crane Co., Toledo, O., has recently installed a coal-handling gantry crane at the Madison street power house of the Toledo Railway & Light Co. The crane was designed to unload coal from cars and commands four railroad tracks, as illustrated in Fig. 1. The coal is unloaded from the bucket into a hopper provided with a screen, which prevents foreign particles from passing through the hopper into the coal crusher. This crusher is of the single-roll type and the coal is discharged into a screw conveyor which delivers it to the elevator. From the spout of the elevator the coal is discharged from hatchways in the roof to the storage bins which are located immediately over the boiler room. This arrangement entirely eliminates the handling of coal by manual labor. The elevator and crusher are driven by independent motors and are controlled from the operator's cage by means of a starting box.

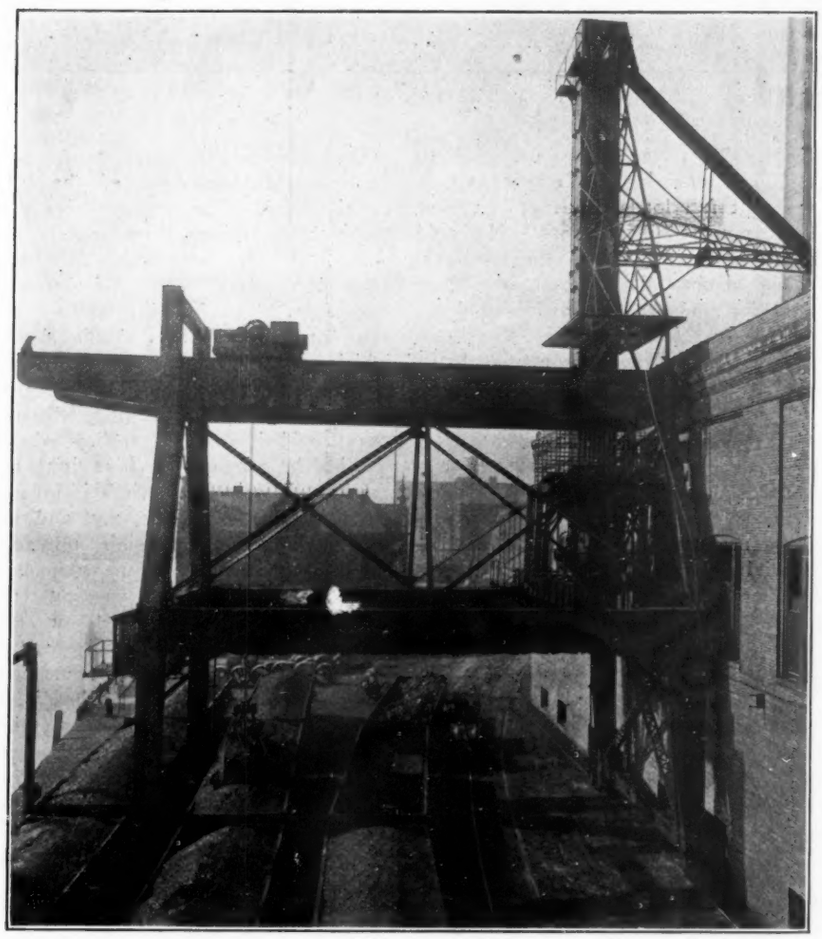


FIG. 1—COAL-HANDLING GANTRY CRANE, BUILT BY THE TOLEDO BRIDGE & CRANE CO., TOLEDO, O.

The height from the crane runway rail to the top of the elevator head is 100 feet and the height from the rail to the top of the trolley rail is 54 feet. The width, from center to center of the truck wheels is 50 feet, while the length of the runway is 400 feet. The guaranteed capacity of the crane is 75 to 100 tons of coal per hour and during a test recently made, 100 tons of coal were unloaded from cars on the outside track into the storage bins in 40 minutes.

The girders and gantry legs are of the riveted box section type and the section which forms a part of the trucks is of riveted plate and angle construction. The four trucks are of cast steel construction with equalizing bearings. The driving gears are keyed to the truck wheel axles and each trucks is constructed of riveted plate and angles. The four trucks are of removal of the equalizing pin. The drive to the trucks is through bevel gears enclosed in oil-tight cases. The driving motors are mounted on the girders at equal distances from the ends and through the cross shaft, connection is made to the vertical shaft by bevel gears. The driving motors are connected in parallel and the foot brake, which is operated from the cage, is located on the main cross-shaft.

The operator's cage is so located as to give a clear view of the trolley and other working parts. In it are located the controllers, switchboard, magnetic switches and starting boxes. The cage is provided with a sub-platform to provide for easy access from the footway which extends the full length of the girder.

The elevator leg is braced and supported by an A-frame, which also forms a support for the elevator mo-

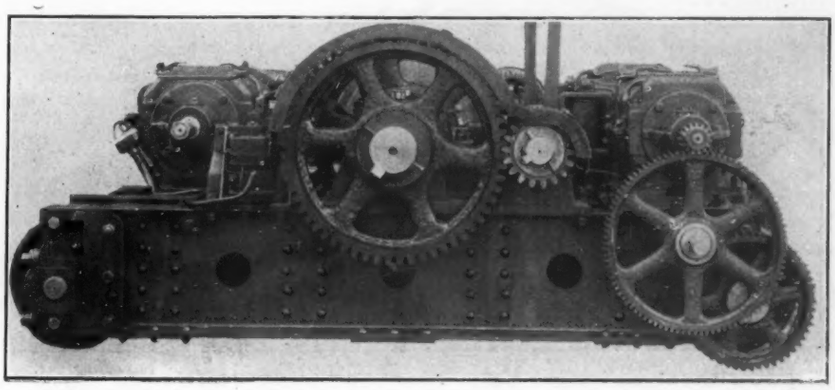


FIG. 2—END OF THE TROLLEY

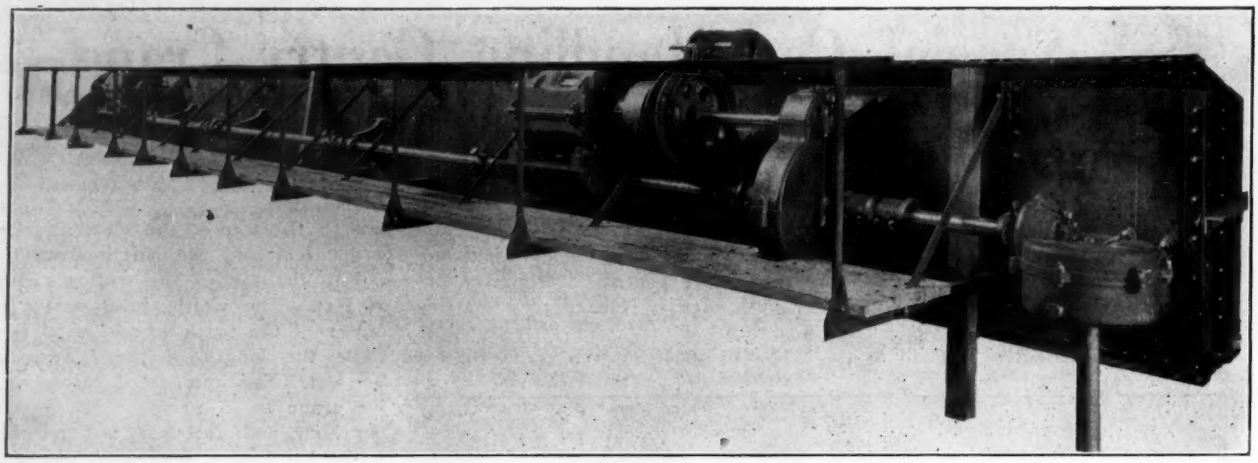


FIG. 3—SECTION OF THE BRIDGE SHOWING THE TWO MOTORS

tor and driving mechanism and a platform for inspection. The discharge spout on the elevator is raised and lowered from the platform by the crane girder. The elevator is of the continuous bucket type, the bucket being carried by a double strand chain.

The trolley is constructed of two built-up steel girder side frames which are connected by structural steel girts. The trolley truck wheels are of cast steel and the bearings are of the M. C. B., self-oiling type. The hoisting mechanism consists of two motors and a separate train of gears driving three drums, one for hoisting and two for opening and closing lines. As the opening and closing lines operate at a greater speed than the hoisting line, it is possible to have all lines in hoisting by the time that the bucket is loaded and closed. The load on the drums is taken by two sets of pinions and gears, which insures a high factor of safety. The gears are made from high carbon cast steel and are cut from the solid and all pinions are of a special grade of alloy steel. The high speed gears are enclosed in oil-tight gear cases. The shafting is designed to eliminate excessive deflection and to transmit full load torque at not over 9,000 pounds fiber stress. No cold rolled steel is used on the trolley.

The drums are of cast iron construction and are provided with deep-cut grooves for the ropes. The bearings consist of split bronze bushings provided with grease pockets, in addition to compression grease cups, to insure against heating in case they are neglected by the operator for a considerable length of time. All bearings are capped and standard through-bolts are used in place of studs and special bolts. The motor brakes are of the shoe type with cast steel magnet frame, arms and cast iron brake wheel and shoes. The lowering energy is dissipated in the dynamic braking resistance and in lowering, these brakes become holding brakes only as the load is brought to a standstill by dynamic braking. The lowering energy is not dissipated in the trolley brakes under any condition.

The two hoisting motors are controlled in hoisting by rheostatic control and in lowering, both motors are braked dynamically, which insures perfect control, regardless of the load on the hook. The trolley drive motor and the bridge drive motors are controlled by standard, face-plate type controllers with self-contained resistance. The hoisting motors are also provided with a limit device which operates in connection with the magnetic switches, which prevent over-travel in hoisting. Guards are provided over the trolley wheels to brush off obstructions on the tracks. A main line switch is located on a bridge at the footway, and the operator makes impossible all accidental starting of the crane while it is being inspected, by opening the switch when passing out on the bridge. With alternating current, two or three-phase, 60-cycle, the mechanical design is identical with the direct-current equipment, with the exception of the elimination of the dynamic braking throughout. The lowering of the loads is accomplished through multiple disc load brakes of large dissipating area, which operate in an oil bath.

The control of the motors is accomplished by inserting resistance in

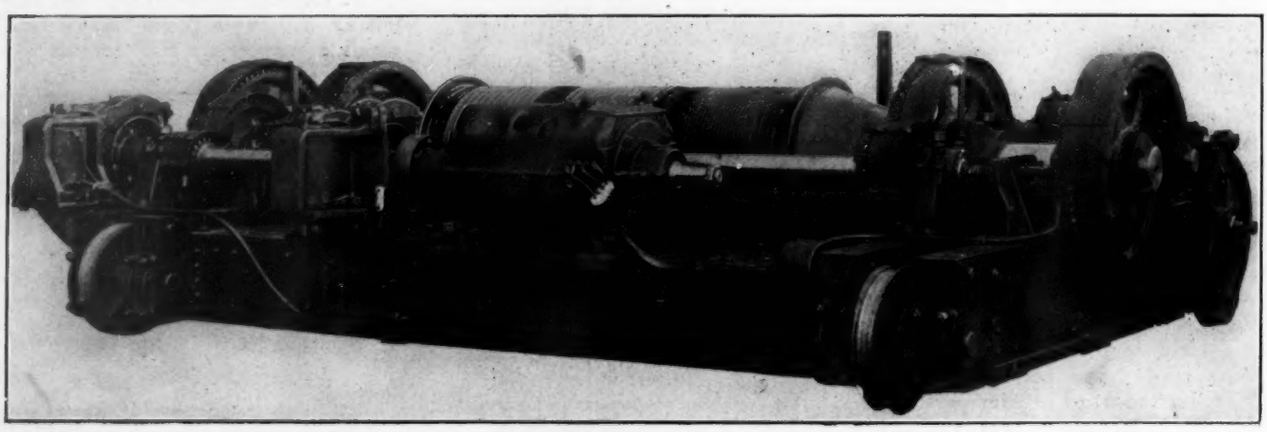


FIG. 4—TOP VIEW OF THE TROLLEY

the rotor circuit by means of magnetic switches operated through master controllers and with the exceptions noted, the general system of control is similar to that of direct-current operation.

In addition to its line of electric and hand power cranes, the Toledo Bridge & Crane Co. makes a specialty of building cranes for handling coal, ore, sand or any similar material.

Direct Current Switchboards

In the accompanying illustrations are shown types of a new line of two-wire and three-wire, direct current switchboards for the control of moderate capacity circuits at 250 volts or less, built by the Westinghouse Electric & Mfg. Co., East Pittsburg, Pa. These panels are particularly adapted for the control of from one to three generators in small industrial plants or central stations, operating low voltage direct current systems. The maximum capacity of a panel is 600 amperes and that of a board of these panels is 1,800 amperes, while the number of panels is limited to five. Each panel consists of a section of slate 48 inches high, varying in width according to the apparatus mounted thereon. The thickness of the slate is 1¼ inches for the two-wire panels and 1½ inches for the three-wire panels. The switchboard is mounted on an iron frame built of 1¼-inch gas pipe uprights, 76⅜ inches high. A wrought iron strap is placed across the top of the board which insures the alignment and perfect rigidity of the panels. The three-wire switchboards are equipped with ammeters, seven inches in diameter, which are of the permanent magnet, open-face, long scale type. Shunts for mounting on the generator frame are provided with the generator panel. A voltmeter on a swinging bracket is provided with each three-wire switchboard and each generator panel has an eight-point voltmeter receptacle by means of which the voltmeter may be connected to indicate the voltage of the generator or the voltage between the neutral and either side of the circuit. To meet the special requirements of the board of fire underwriters, and to provide as large a variety of arrangements of apparatus as possible, these panels are supplied with automatic protection as follows: Two-wire generator circuits, single pole type carbon circuit-breakers or enclosed fuses mounted on the front of the panel.

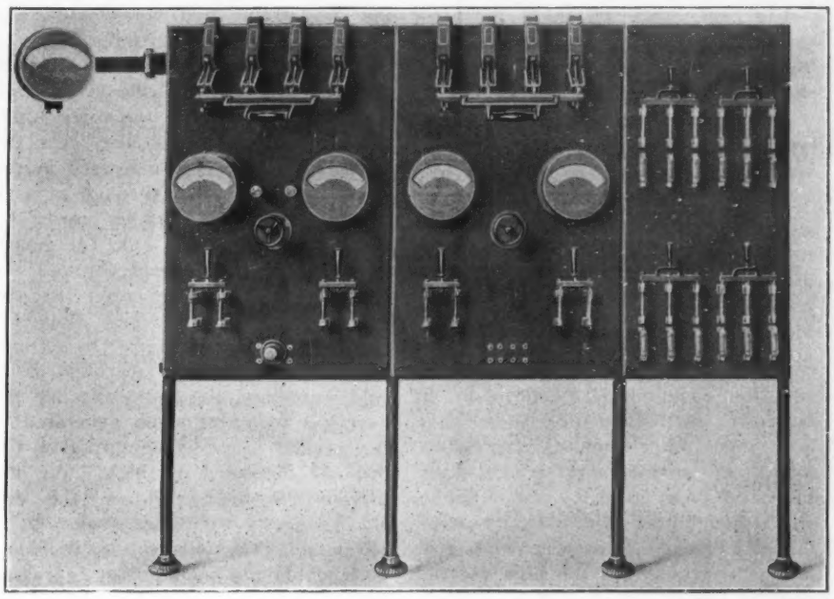


FIG. 2—THREE-WIRE, DIRECT CURRENT SWITCHBOARD

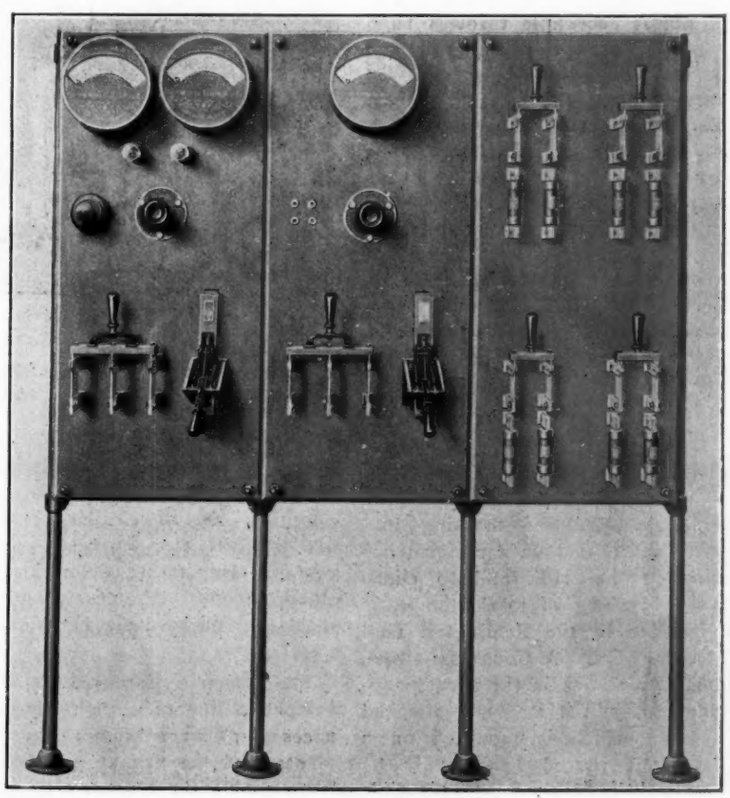


FIG. 1—TWO-WIRE, DIRECT CURRENT SWITCHBOARD

Two-wire feeder circuits, single-pole type carbon circuit breakers; enclosed fuses mounted on the front of the panel or enclosed fuses on slate bases, mounted on brackets on the rear of the panel.

Three-wire generator circuits, four-pole type carbon circuit-breakers, one pole in the positive, negative and two equalizer loads.

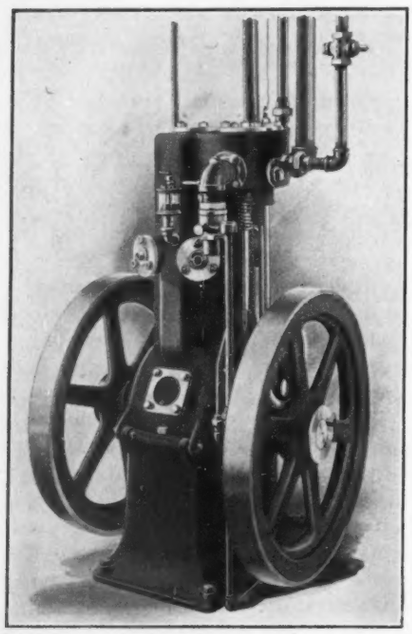
Three-wire feeder circuits, two-pole type carbon circuit-breakers, or three single-pole type carbon circuit breakers, with a common trip attachment, by which all poles are tripped when any one trip coil is actuated. This attachment permits the breaker to be used as a combination switch and over-load cir-

cuit-breaker; enclosed fuses mounted on the front of the panel or enclosed fuses on slate bases mounted on brackets on the rear of the panels.

The switches are of the knife blade type, either single or double-throw, according to service.

A Two-Stage, Gas-Driven Air Compressor

With the increase in demand for compressed air for industrial purposes and its economical compression in large or small quantities, there have been many improvements and refinements in compressors which have increased their efficiency and reliability, although the thermal and volumetric efficiency of some types is still low. On account of the high cost of electric power and the comparatively



SARGENT, TWO-STAGE, GAS-DRIVEN AIR COMPRESSOR

low mechanical efficiency of compressors belted from gas engines, small quantities of compressed air are not available to many establishments where it would be used if the cost of compression were less.

To meet the demands for a self-contained, gas-driven air compressor, the machine shown in the accompanying illustration was designed by C. E. Sargent, 136 West Lake street, Chicago. It consists of a vertical gas engine with a differential trunk piston, the annular space around it being used for compressing the air. As there is only one piston, one connecting rod and one crank shaft for both the gas engine and compressor, the combined efficiency of the unit is necessarily high. On the up stroke, the air is drawn into the crank case when it registers with the corresponding port on the crank disc. On the down stroke air is compressed in the crank case and flows through a valve into the annular chamber made by the differential piston. On the return stroke this air is forced through the discharge valve and outlet to the storage tank during which time the crank case is again filled. On account of the large surface surrounded by cold water and the short distance the heat has to travel when generated in the annular space by compression, the thermal efficiency is high. As the pressure is always down, the discharge pressures range from 60 to 140 pounds. The engine is of the four-cycle type and as air is compressed every stroke, the two fly wheels and crank disc are made heavy to maintain a sufficiently uniform speed.

Gas, gasoline or kerosene may be used as fuel. When gas is used it is admitted through a graduated valve into a space from which it flows to the explosion chamber with the air when the collar on the admission valve rises. Gasoline or kerosene are taken in through a mixing valve on the air pipe. Compressed air which the engine compresses is used from a storage tank for starting. The crank pin is accessible through hand hole plates, or the piston rod and crank may be adjusted or removed by turning back the cylinder on its hinge. One sight feed oil cup lubricates both ends of the piston. The main bearings are lubricated by heavy grease which also makes an effectual air seal. Ignition is by jump spark when the primary circuit is closed once in two revolutions by a pin on secondary gear. These compressors are made in four sizes to compress from 9 to 150 cubic feet of free air per minute.

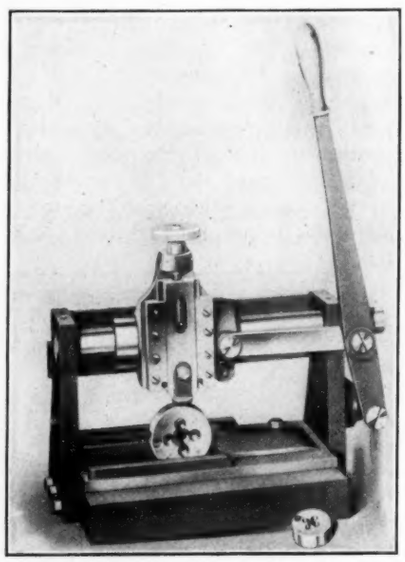
A New Marking Machine

A simple form of marking machine, designed to give a uniform impression in the work and to eliminate the breaking of steel stamps, is manufactured by the Remington Tool & Machine Co., 50 Congress street, Boston. As shown in the accompanying illustration, the stamp is attached to a slide which is mounted on a head and is moved horizontally by the vertical lever shown. This slide is provided with means for quick vertical adjustment to compensate for the varying thicknesses of stock being stamped and a stop is provided to regulate the horizontal movement of the head. The machine has a capacity of 1,800 pieces per hour and it is adapted for straight stamps for marking round work or for circular stamps when marking flat surfaces.

New Furnace Testing Laboratory

The new furnace testing laboratory of the Electric Furnace Co., Alliance, O., will be completed about Aug. 15. The building is located on a tract of land secured from The Stark Electric R. R. Co. at its Lake Park power house near Alliance, and power for testing purposes will be received direct from the railroad company's buss bars.

The plant will be supplied with a



MARKING MACHINE, BUILT BY THE REMINGTON TOOL & MACHINE CO.

200-kilo-volt-ampere Westinghouse special regulating transformer, a complete set of electrical recording and indicating instruments, pyrometers for temperature determinations, a small chemical laboratory, and equipment for microscopic examination of metals.

The Electric Furnace Co. has developed a line of electric heating furnaces for forge shops and similar plants, and the new testing laboratory is to enable the company to test new types of furnaces that are being rapidly called for.

Layout and Arrangement of Modern Foundries

Plans for Malleable Foundries of 5, 10 and 100 Tons Daily Capacities with Details of their Equipment

The production of malleable castings on a large scale in the United States has resulted in the development of a special type of foundry adapted to this work. The layouts of three typical, modern malleable iron foundries of 5, 10 and 100 tons daily capacity, respectively, are illustrated herewith. Malleable cast iron, as is well known, is first cast in the condition of ordinary white cast iron and subsequently made malleable by heat treatment without fusion. The characteristic of malleable cast iron is that the graphite does not form in flakes as in ordinary gray cast iron, but is in a finely divided condition, to which the name *temper* carbon or *temper* graphite is given. In this form the carbon is not nearly so weakening in its effect on the casting as flakes of graphite. The process of making malleable castings was invented by Reaumur, in 1822, but has only been in general use less than 50 years. The last few years have seen a remarkable growth in the malleable cast iron industry. In 1908 there were 153 malleable foundries in the United States, and their number was increased to 178 in 1910. Ten of these foundries are in Canada. Malleable castings are very popular for railroad rolling stock construction and a high authority states that probably about one-half of the malleable cast iron production of the United States goes into railroad work. A number of the larger railroad systems own and operate extensive malleable foundries.

Molding Floor Area.

By referring to the plans, published herewith, it will be seen that there are a number of general features common to the various sized shops. The molding floor equipment for making malleable castings is the same as for a gray iron foundry and the molding practice differs but little. The average malleable casting is comparatively small and, therefore, a malleable shop must have a larger molding floor area than a general gray iron foundry of equivalent output. This is plainly illustrated in the layouts which have been published in this series of articles, the molding floor area of the 5-ton malleable foundry being nearly double that of the 5-ton gray iron foundry, while the 10-ton malleable foundry has practically three times the molding floor area of the 10-ton gray iron foundry.

Core Ovens.

Malleable foundries are fitted with core oven equipment similar to gray iron shops. A typical core oven, fitted with racks for baking light cores suitable for malleable foundry practice, is shown in Fig. 3. This oven has a fire pit arranged for burning coke and is provided with a sliding, counterweighted steel door. The roof of the oven consists of a series of flat arches supported by I-beams.

Instead of a cupola, the modern malleable foundry is provided with an air furnace which permits the melting of a more refined product than can be obtained from the cupola. These furnaces are usually designed to burn coal and are of the reverberatory type. In some cases, malleable cast iron is melted in open-hearth furnaces provided with regenerators, but the average air furnace is not fitted with regenerators. The cupola, however, is a necessary part of the equipment of every malleable iron plant, the metal melted therein being used for casting annealing boxes. Malleable iron is also melted in cupolas in a number of small malleable shops, but in the aggregate, the output is small.

The outer wall of the air furnace is built of common red brick and the inner wall of fire brick. One authority gives the following dimensions for a modified, Pittsburg type, air furnace of 15 tons capacity. Fire box, 6 feet long, 6 feet wide and 4 feet, 2 inches from grate bars to bottom of roof arch, the grate area being 36 square feet. The ash pit for this furnace is 6 feet square and 2 feet, 6 inches deep. The bridge wall is 18 inches thick and 22 inches high above the grate. The hearth is 16 feet long and 6 feet wide, having an area of 96 square feet. This furnace is connected through a flue 3 feet square to a chimney 2 feet 6 inches in diameter and 60 feet in height. The air furnace is charged by removing the bungs over the hearth. Light cranes, or air hoists, for handling the bungs and also the material charged into the furnace have been found advantageous.

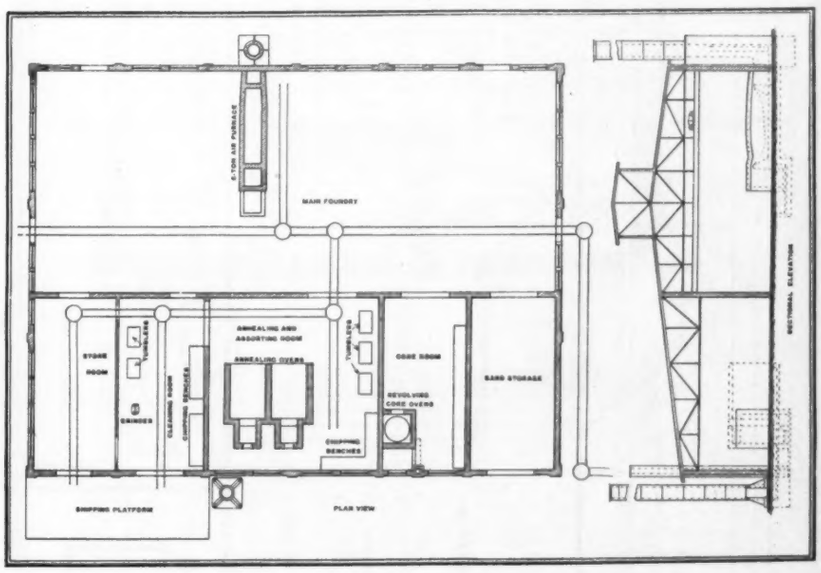


FIG. 1—PLAN AND SECTIONAL ELEVATION OF A MALLEABLE FOUNDRY OF FIVE TONS DAILY CAPACITY

Cleaning Castings.

Before annealing, malleable castings must be thoroughly cleaned. Standard foundry tumblers are generally used, plenty of small cast iron stars being placed in the tumblers

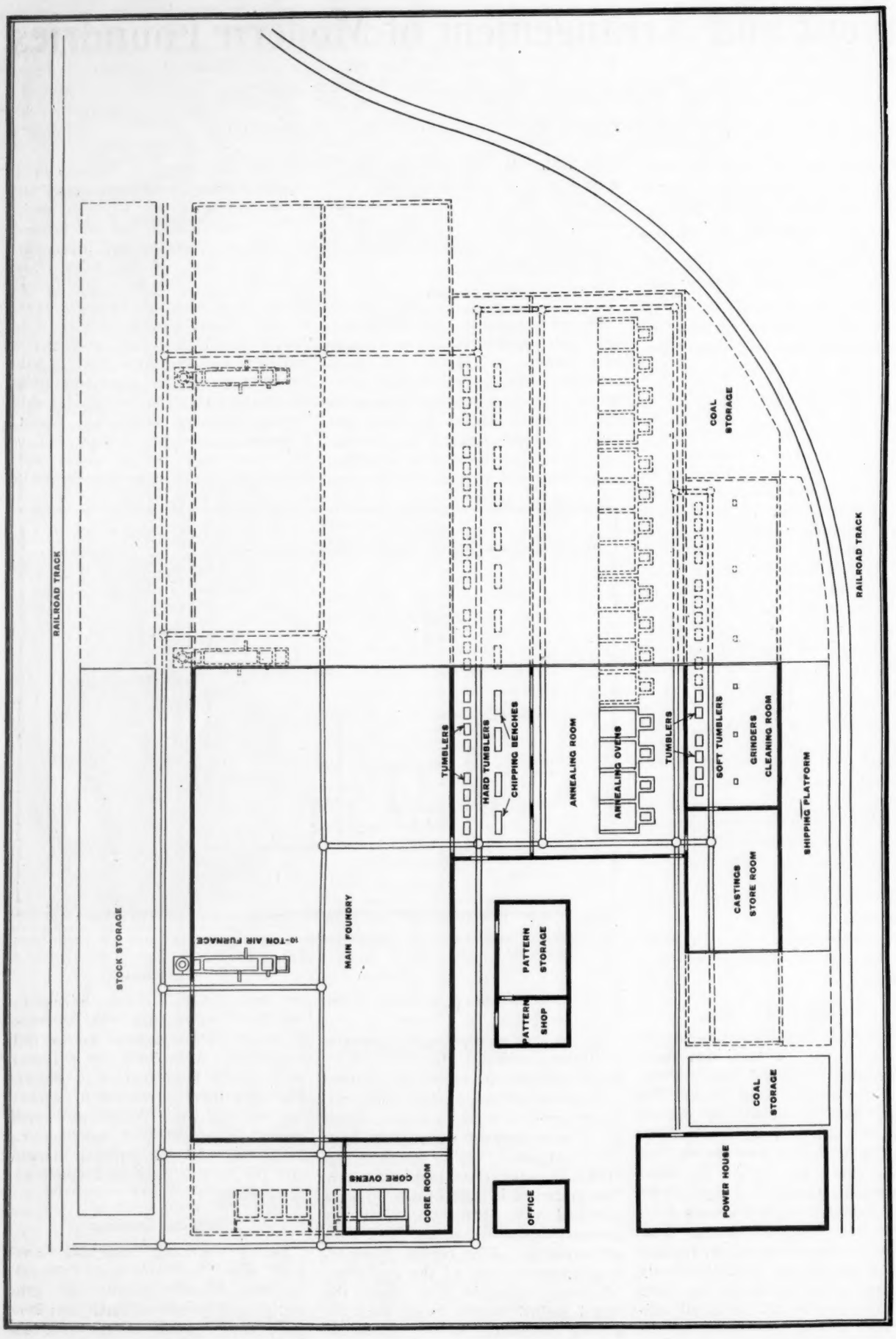


FIG. 2—GENERAL ARRANGEMENT OF MALLEABLE FOUNDRY OF TEN TONS DAILY CAPACITY

with the castings. In some shops a sand blast is used which cleans the castings very effectively. After the castings are cleaned they are packed in annealing pots with iron ore, mill scale, or other suitable packing, and annealed in annealing ovens specially designed for that purpose. The boxes are placed in the annealing ovens in such a way that the flames will play around them as completely as possible. The flame usually comes in at the top of the oven and goes out at the bottom along the side and thence through flues underneath the oven. The fuel for the annealing oven may be either coke, coal, oil or gas, the latter being preferable on account of the better control of temperature possible. The temperature of the oven should be increased at a very gradual and uniform rate while it is heating up and kept as constant as possible during the annealing period. A large number of annealing ovens are necessary in a plant handling a large tonnage, since it takes about six days for the annealing operation, including heating-up and cooling-down. Sometimes this period can be shortened a little by decreasing the time of the full annealing heat and by cooling rapidly, or drawing the boxes out of the oven and dumping them while the contents are still at a dull red heat; but this practice is not conducive to a good quality of castings. A prominent authority states that the time at the full heat should never be less than 60 hours, and preferably more. Air furnace castings are generally annealed at temperatures between 1,250 and 1,400 dgrees Fahr.

Annealing Ovens.

Annealing ovens designed for burning coal should have a large grate area so that a slow fire can be maintained. Forcing the fire causes the introduction of an excess of air into the oven which, after the full heat has been reached, will always unduly burn the boxes. The fact that it is difficult to regulate a coal fire on account of the necessary periodical cleaning and firing, militates in favor of gas or coke for annealing furnaces.

There are two methods which may be used in tapping the air furnace. Either a small stream of metal may be allowed to flow, which is caught in small ladles and immediately poured into the molds, or the metal may be run out quickly into a big ladle, from which it is repoured into small ladles. The latter method necessitates the installation of a large ladle fitted with geared pouring mechanism.

The crane equipment of the average malleable foundry is light, since no very heavy castings are handled. As previously stated, an I-beam trolley is desirable over the furnaces. The foundry should be equipped with a complete industrial railroad, reaching all parts of the shop, on which the castings may be quickly and economically moved from one department to another.

The layout of a 5-ton malleable foundry is shown in Fig. 1. A steel frame mill building of the usual type, fitted with a monitor roof is used. The molding floor is 120 x 50 feet, having an area of 6,000 square feet compared to 3,350 square feet for a typical gray iron foundry of the same capacity. A 6-ton air furnace is situated in the middle of the molding floor. The hearth of this furnace is 4 x 19 feet and the fire box 4 feet square. In the side bay, opposite the molding floor, are the storage rooms, core room, cleaning room and annealing ovens. The cleaning room is fitted with one double emery grinder and two 36 x 48-inch tumblers, together with two chipping benches. This room is 20 x 40 feet in size. The annealing ovens are placed in a room 40 feet square. Two ovens are installed, each one being 8 feet 3 inches by 12 feet 6 inches, provided with a firebox 4 feet square, the grate area being 16 square feet. The ovens are designed for burning coke. Three 36 x 48-inch tumblers are installed in the annealing room. The core room is fitted with a Whiting revolving core oven having six shelves, 6 feet in diameter, each. A light I-beam trolley is installed over the air furnace. The plant is equipped with an

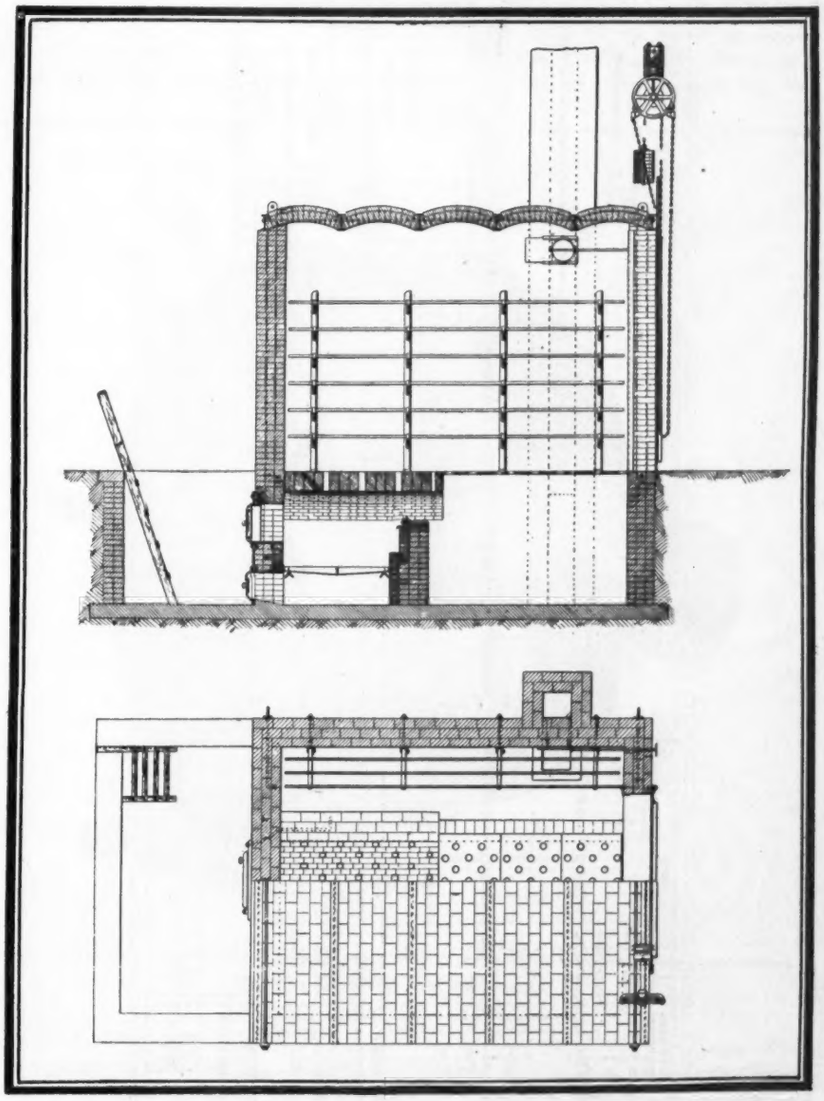


FIG. 3—SECTIONAL AND PLAN VIEWS OF CORE OVEN SUITABLE FOR MALLEABLE FOUNDRY WORK

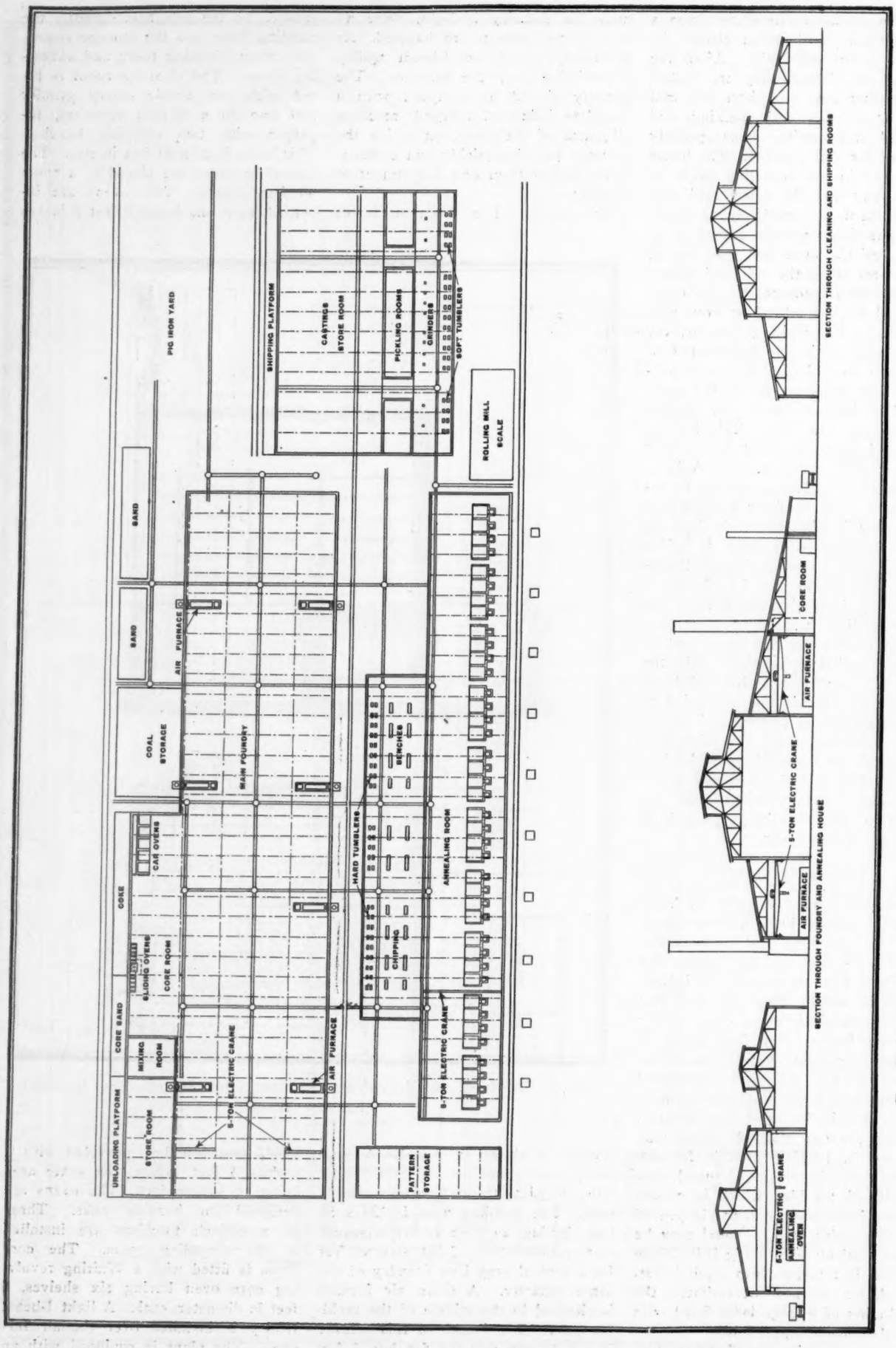


FIG. 4—GROUND PLAN AND SECTIONAL ELEVATIONS OF A MALLEABLE FOUNDRY HAVING A DAILY CAPACITY OF 100 TONS

industrial railway and with standard gage shipping tracks, as shown in the illustrations.

The 10-ton Malleable Foundry.

The 10-ton malleable foundry is shown in Fig. 2. This shop is designed to be built on a rectangular plot of ground, 600 x 360 feet in size. Less than one-half of the ground, however, is occupied by the 10-ton foundry. The plant is ingeniously laid out to provide for further extensions which will increase its capacity three-fold. The solid lines show the 10-ton foundry as constructed and the dotted lines show the future additions which may be made at any time. The molding floor is 110 x 200 feet in size, its area being 22,000 square feet. This may be compared with a molding floor area of 7,000 feet for a 10-ton gray iron foundry. This shop is equipped with a 10-ton air furnace of standard design. The core room, 40 feet square, is in a small addition at one end of the main building. It is provided with two core ovens, each 9 x 12 feet. As shown in Fig. 2, the cleaning and annealing departments are situated in an ell built onto one end of the main building. The cleaning room is 38 x 80 feet, and is equipped with eight 36 x 48-inch, hard tumblers. The annealing room is 67 x 80 feet in size, equipped at present with four ovens, each 12 x 16 feet, with space left for a fifth oven to be installed when the output of the shop demands it. Beyond the annealing room is a second grinding and cleaning room where the castings are given a final cleaning. This room is equipped with six 36 x 48-inch, soft tumblers. Adjoining this cleaning room is a store room, 40 x 60 feet. The compact arrangement of this plant is noteworthy. It will be noted that the castings proceed in a direct line from the molding floor through the various departments to the shipping platform, which is 27 x 120 feet. A separate building, 30 x 60 feet, one story, is used for a pattern shop and pattern storage room. The material storage yard is located back of the main factory on a plot of ground, 30 x 230 feet.

A plan and two cross-sections of the 100-ton shop are shown in Fig. 4. This plant consists of four separate buildings, a main foundry, 700 x 150 feet, an annealing house, 620 x 140 feet, a finishing and shipping building, 260 x 176 feet, and a pattern storage loft, 140 x 50 feet. The area of the main molding floor is 105,000 square feet. The main foundry building consists of a main bay with a monitor roof and two side bays. Seven 15-ton air furnaces are located in the side bays, four on one side and three on the other. The furnaces are served by 5-ton electric traveling cranes, 38-foot span, which run the full length of the side bays.

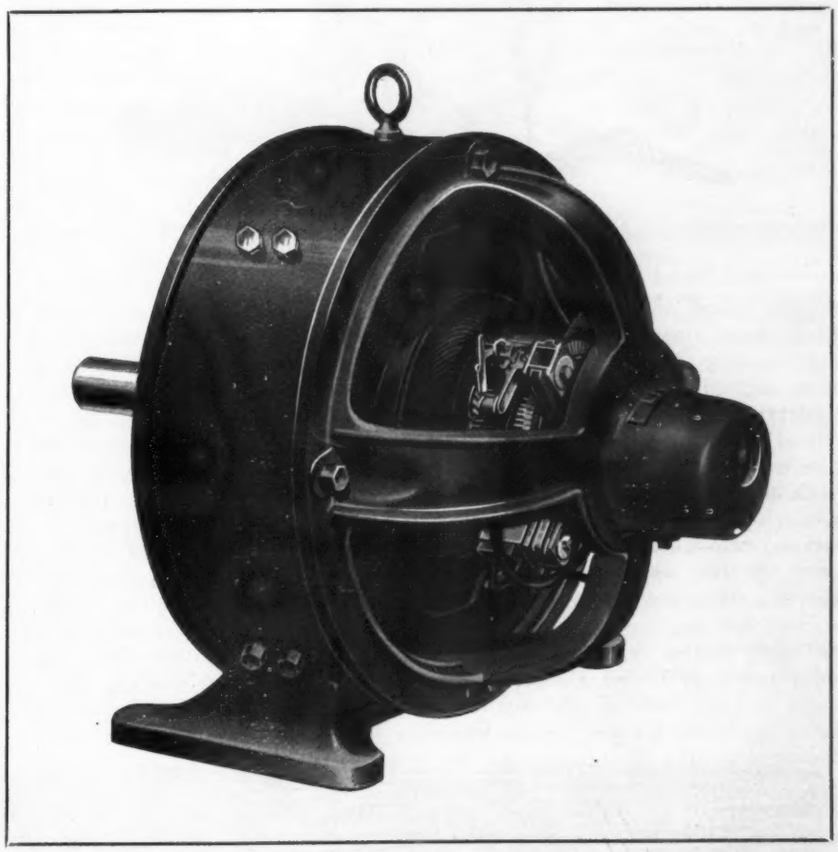
An addition built on one side of the main foundry contains the core room, 220 x 75 feet, a mixing room, 40 x 75 feet, and a store room, 50 x 120 feet. The core room is fitted with ten sliding core ovens and five car ovens, each 10 x 12 feet.

The annealing house is parallel to the main foundry and consists of two parallel bays. Tumblers and chipping benches are installed in the bay nearest the main foundry and the annealing furnaces in the other bay. Forty annealing furnaces, each 12 x 16 feet, are installed. The annealing furnaces are arranged in groups of four and are designed for burning coke. The annealing bay is spanned by a 5-ton electric traveling crane.

The cleaning and shipping building is also a steel frame structure consisting of a main bay with two side bays. This building is divided into a cleaning and grinding department, 40 x 260 feet, pickling rooms, 30 x 260 feet, and a store room, 10 x 260 feet. The entire plant is equipped with an extensive 24-inch gage industrial railway system and standard gage tracks are built alongside the foundry, annealing room and shipping platform, as shown in Fig. 4. A fireproof pattern storage building, 140 x 50 feet, is situated adjacent to one end of the annealing room.

An Electric Arc Welder

For the purpose of patching defective castings, burning off risers and similar work in steel foundries, the Lincoln Electric Co., Cleveland, has developed a new type of transforming device shown in the accompanying illustration. It is fundamentally a variable voltage machine, the voltage at the arc depending entirely upon the amount of current flowing and this voltage at the arc can be set for any value which the operator may desire. By the use of this welder, the length of the arc determines entirely the amount of current flowing and by varying the length of the arc the amount of current which is flowing can be automatically varied. There is no ohmic resistance used on the usual work and since there is only one ma-



LINCOLN ELECTRIC ARC WELDER

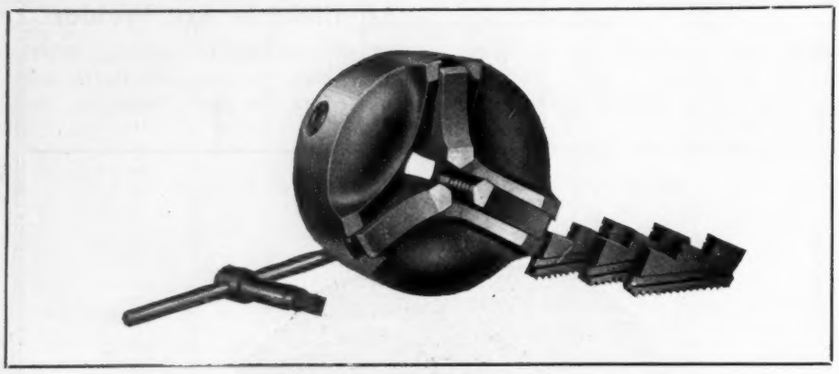
chine and one commutator, the no-load losses are very small compared with what they would be in the case of a motor generator set. The enormous saving in current is indicated by the fact that from 80 to 85 per cent of the power taken from the line is found in the arc when the machine is in operation. The machine is furnished with a panel board, which can be mounted directly on the welder.

On this board are mounted an ammeter, main switch, arc switch and field regulator and the entire weight of the outfit is only 1,500 pounds. It is portable and can be taken to any part of the shop on a truck. The machine can also be equipped with a push button device so that it may be started or stopped without being compelled to go into the room where the machine is located. In this way the operator can shut down the welder if it is not to be used for any length of time. If the supply current is alternating it becomes necessary to use a motor generator set and even in this case the use of any resistance has been entirely eliminated so that the efficiency of the outfit is extremely high and the regulation is equally as good as when the supply current is direct. In addition to repairing defective steel castings, burning off risers, etc., the welder can be used for burning holes in boiler plate and other similar work. With the usual machine adapted for steel foundry work it is possible to obtain any current from 50 to 500 amperes at any voltage that the operator may require. Direct-current machines are built in three sizes of 400, 500 and 600 maximum arc amperes and three alternating current sizes are also built, 25 to 60 cycles, two or three-phase, of 400, 500 and 600 maximum arc amperes.

The Union Malleable Iron Co., Moline, Ill., has increased the number of its directors from five to nine.

A High Duty Chuck

In the accompanying illustration is shown a chuck designed for heavy work which is particularly adapted for use on machine tools using high speed steel. The chuck possesses great gripping power and the principal difference between its construction and one of the ordinary type, is in the scroll, which is conical in form.



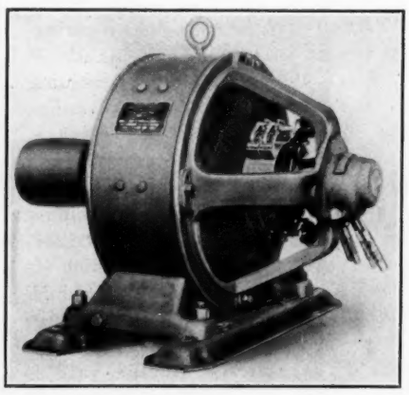
High Duty Chuck for Heavy Work

The spiral threads for moving the jaws in or out are cut on the sloping or conical surface of the scroll or ring, and they are V-shaped instead of being square. The principal advantage claimed for this construction is that the thrust of the jaws is taken directly by the conical ring, thus reducing the strain upon the ways and keeping the jaws in permanent alignment. The comparatively fine pitch of the V-thread also gives a very powerful grip. This conical ring is hardened and the V-thread is afterwards ground to eliminate any distortion which may have been caused by the hardening operation. The hardened gripping surfaces of the jaws are also ground after the jaws are assembled. This chuck is made in 10 sizes with outside diameters varying from 4¾ to about 17 inches. Two sets of jaws can be provided, as shown in the accompanying illustration, one being of the plain and the other of the stepped type for holding large diameters. The body of the chuck is made large enough so that the ends of the jaws do not protrude, except when holding comparatively large work, thus reducing the possibility of accidents. This chuck has been placed on the market by Schuchardt & Schutte, 90 West street, New York City.

The Republic Iron & Steel Co. relighted its Atlantic furnace on July 10 and its Hall furnace on July 16. It blew out Haselton No. 2 on July 1.

A New Direct Current Motor

The Westinghouse Electric & Mfg. Co., East Pittsburg, Pa., is now building a new type of direct-current motor for general power service which embodies a number of novel features. Excellent commutation is obtained, partly by the use of commutating poles and partly by the careful design of the commutator and brush holders. Practical service tests have shown almost sparkless commutation under all conditions of speed or load up to extreme overloads. Other important characteristics of this type of motor include the large dust-proof bearings and the efficiency of the oiling system. Large oil rings keep the bearing surfaces well lubricated whenever the motor is in operation, but the oil cannot leak nor can it be thrown out of the oil well. As shown in the accompanying illustration, the motor is simple in construction. The frame is of a new design and the ring is made of open-hearth steel with the ends welded together. Rolled steel is an ideal material for motor frames because of its high magnetic permeability, uniform structure and great strength. The feet are pressed from steel plate and are riveted to the ring. The armature is so wound that spaces are left between the ends of the coils and ventilating ducts are provided in the core, an arrangement that assures ample ventilation. The coils are form wound, laid in open slots and are held by fiber wedges and bands. The shaft can be pressed out without disturbing the armature windings and commutator connections. These motors are made for 115, 230 and 550 volts in capacities of from 1½ to 50 horsepower. The speeds correspond closely to the full load speeds of induction motors, thus simplifying the application of motors and making changes of motors from one class to those of another, comparatively easy.



A Direct Current Motor

Modern Electrical Applications in Foundries[1]

A Discussion of the Advantages of Electric Motor Drive for Machinery Used in Casting Plants

By Brent Wiley

With the advent of the electrical overhead traveling crane about 18 years ago, electricity became a governing factor in perfecting foundry methods, and today the general and most important advantages offered by electric drive for practically the entire machine equipment are well established. However, there are many features of electrical engineering as applied to the foundry which are the objects of continued attention and study on the part of the foundrymen and all others interested in foundry engineering, including the electric manufacturing companies, and it is the object of this paper to review the most important subjects, including the advantages of the system and apparatus best adapted for the various applications and point out to what extent the question of economies can be effected by the present day developments of the art of electric drive and general applications of electricity.

The advantages of electric motor drive for machinery used in the foundry may be summed up as follows:

(1) Adaptability of motors to all classes of service by reason of compact construction, substantial characteristics and flexibility of mechanical and electrical design.

(2) Wide speed range, ease and certainty of control; automatic devices insure the safety of the motor and the driven machine.

(3) Easy and inexpensive distribution of power by electric conductors and the saving of power by direct connection of motor to machine, eliminating line shaft and belting.

(4) Advantages of centralized power.

It is quite logical to state that these advantages are well established in the minds of foundrymen since electric drive has been adopted so universally. It would be well, however, to review these applications in order to recall to mind the exact conditions of operation, and consequent requirements of motor characteristics of power supply system best suited from a general engineering standpoint.

Iron Foundry.

In the iron foundry the applications of motor drive may be summed up as follows:

Stock Yard.—Overhead traveling crane; magnet for handling pig iron and scrap; skull cracker for breaking scrap.

Cupola.—Positive blower or fan type and elevator.

Molding Floor.—Cranes, overhead, traveling or jib, molding machines, core machines, sand cutter or mixer and sand sifter, traveling tables, sand elevators and sand conveyors for special foundries.

Pouring Floor.—Cranes—overhead, traveling or jib.

Cleaning and Finishing Department.—Crane, tumblers, grinders, lathes, shapers, drill press, planer, etc.

The applications of electric drive in the steel foundry, follow:

Stock Yard.—Overhead traveling crane, magnet for handling pig iron and scrap and skull cracker hoist.

Furnace Department.—Charging machine.

Molding Floor.—Crane, overhead, traveling or jib; sand mill and molding machines.

Pouring Floor.—Crane, overhead, traveling or jib.

Cleaning and Finishing Department.—Crane, cold saw, grinder, lathe, planer, shaper and drill press.

Application Common to All Foundries.—Air compressor, fans for ventilating and heating, pumps, coal and ash handling machinery and pattern and machine shop machinery.

It is not the intention to give engineering details such as number and capacity of cranes and capacity of motors for the various applications of the foundry, but to analyze the general conditions and give data that will assist in arriving at proper power house equipment and systems of power best adapted to the conditions.

A thorough analysis of several large steel and iron foundries was made with particular reference to electrical installations, operating conditions and

FIG. 1—MOTOR-DRIVEN MACHINERY IN THE CLEANING DEPARTMENT OF THE VANDERGRIFT, PA., FOUNDRY OF THE UNITED ENGINEERING & FOUNDRY CO., PITTSBURG

[1]Presented at the Pittsburg convention of the American Foundrymen's Association.

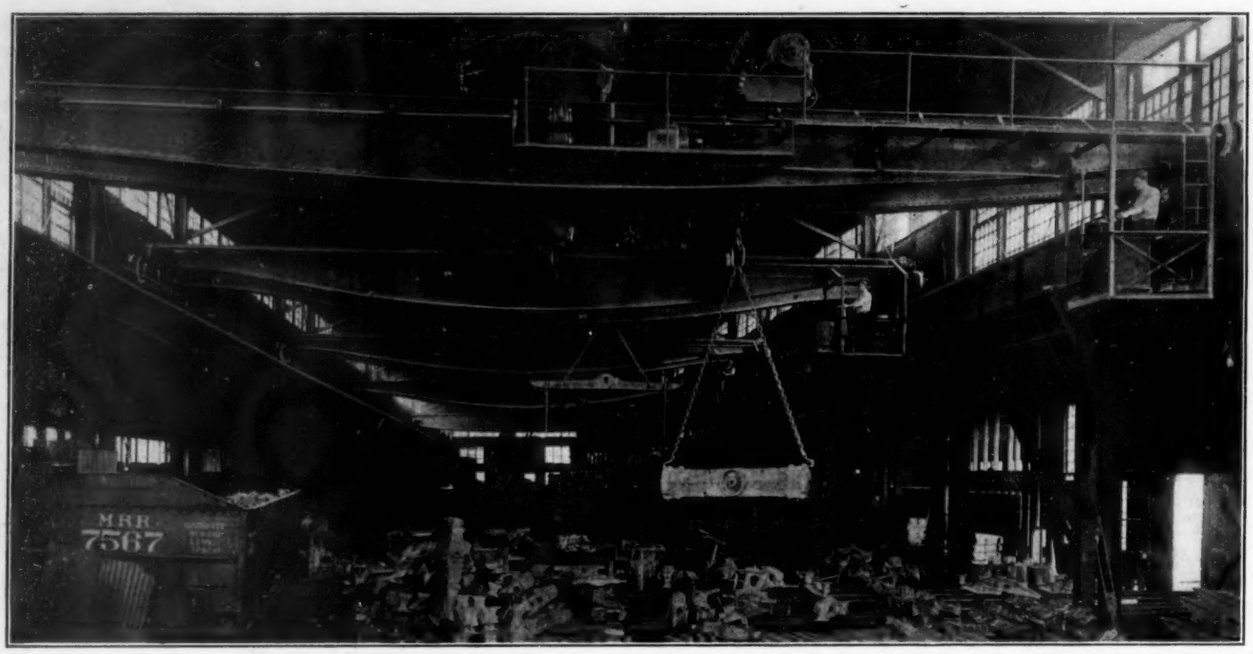


FIG. 2—MAIN FLOOR OF THE PITTSBURG STEEL FOUNDRY CO.'S PLANT, SHOWING THE AMPLE ELECTRIC CRANE FACILITIES FOR HANDLING LARGE CASTINGS

power requirements. These foundries were of the modern type with electrical drive throughout and were equipped with overhead traveling cranes in each department. The capacities ranged from 1,500 to 2,000 tons per month and the weight of the castings varied from 100 to 100,000 pounds with an average of 250 pounds. The electrical equipment was 220-volt, direct current, with one exception, which included 400-volt, 3-phase, alternating-current machines. The average conditions for these foundries are shown in the accompanying table.

A general rule for power house capacities is that the average load will be approximately one-third the total capacities of floor motors and crane hoist motors. In figuring the crane load on the power station, it is to be noted that as the hoisting motion of the crane gives the heaviest load and as it is seldom that more than one motion is used at a time, it is sufficient to consider the load on this motor only. As the crane work is very intermittent, the load is very fluctuating and the total capacity of power generators should not be less than twice the average load. As a general rule, a spare generating unit will prove a paying investment to insure ample power at all times.

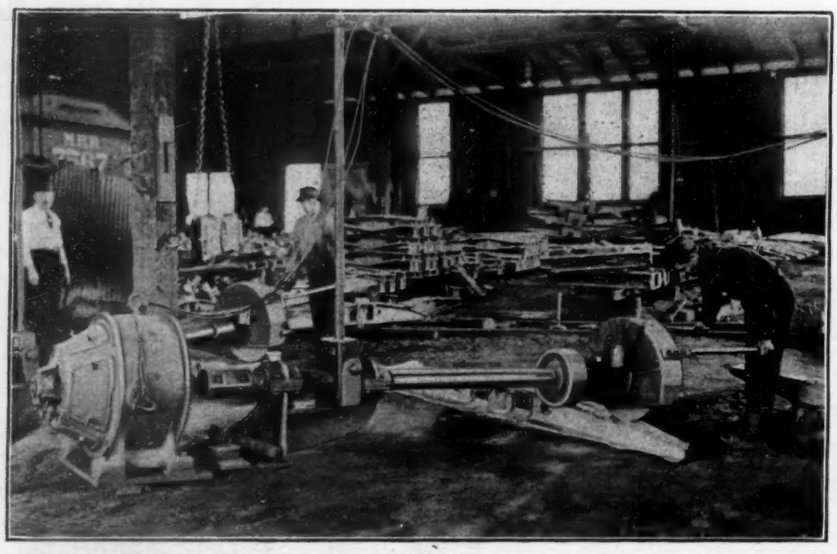


FIG. 3—A MOTOR-DRIVEN, DIRECT-CONNECTED GRINDER USED FOR GRINDING STEEL CASTINGS

For the above conditions the average power house load $= \frac{329 \text{ plus } 400}{3}$ = 243 horsepower = 181 kilowatts, and two 175-kilowatt generators would be sufficient.

Or figured on another basis, it requires approximately 35 kilowatt hours per ton of steel castings and approximately 45 kilowatt hours per ton of iron castings, for foundries with electrical equipment and capacity as given above. The blast for the cupola of the iron foundry and the greater amount of small work, increases the electric power per ton output.

The values given for power house capacities include power for lights

Electrical Equipment in Foundries.

FLOOR MOTORS.

	Number	Size, horsepower.	Total horsepower
Air compressor	1	75	75
Cold saws	2	20	40
Sand mills	2	30	60
Grinders	8	5	40
Machine shop	6	..	50
Repair shop	1	25	25
Miscellaneous	5	..	39
Total	25	..	329

CRANES.

	Number.	Capacity tons.	Total horsepower.
Air compressor	2	50	280
Cold saws	3	25	250
Grinders	4	10	180
Machine shop	2	5	90
Total	11	..	800

TOTALS.

	Horsepower.
Floor motors	329
Crane motors	800
Crane hoist motors	400

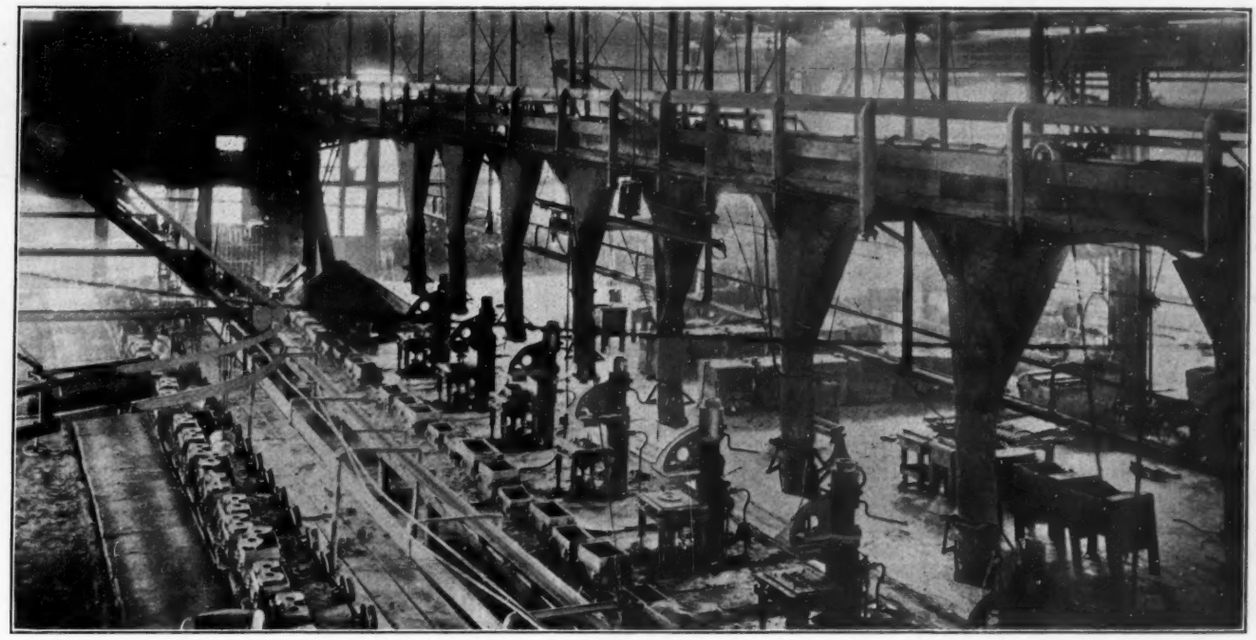


FIG. 4—MOTOR-DRIVEN, CONTINUOUS MOLDING TABLE, SAND ELEVATOR AND SAND CONVEYOR IN THE WESTINGHOUSE AIR BRAKE CO.'S FOUNDRY

and other auxiliaries, such as electric welding for steel foundries and machinery for repair shop and pattern shop.

The following general conditions for foundries, as previously mentioned, have been established. The capacity of the floor or constant speed motors is approximately equal to the capacity of the crane hoist motors:

(1' The average station load equals one-third the total capacity of floor motors and crane hoist motors.
(2) The maximum station load equals approximately twice the average load.
(3) The average distance for distribution of power is 600 feet or less.
(4) The applications of adiustable speed motors are few except where considerable machine work is done, in which case, the power will seldom be over 15 per cent of the total station capacity.
(5) The lighting load will average from 10 to 12 per cent of the total load.

The majority of the motor-driven foundry apparatus is located in the main working rooms and is, therefore, subject to a very dusty and gritty atmosphere and this is particularly so in the cleaning and grinding departments. While in the past, it has been almost a universal practice to connect the motors to the driven machines by means of belting, there is a decided tendency at this period to connect the motor in a more direct manner, either by gearing or direct drive. This applies particularly to grinders, machine tools, air compressors, fans and blowers. There is excessive wear of the belt on account of the grit and dust in the air and on account of slippage due to overloads, and in some cases, such as grinders, considerable power is saved by a more direct connection of the motor.

Direct Drive.

The present designs of motors have been developed to meet these improved methods of drive. The frames and especially the shaft and bearings are made stronger and arrangements are provided to dust-proof the bearings. The windings are of a more substantial form and are well-braced, and from an electrical standpoint, improved characteristics are provided such as high starting torques, excessive overload capacities and greater range of speeds. In general, a decided improvement has been made in the all-over efficiencies and reliability of motors for this class of service.

The most common electrical questions are, "Which is the better system to adopt, alternating current or direct current?" and "Why and what should be the characteristics of the system adopted?"

For the average foundry as previously described, in which crane service is the most important feature,

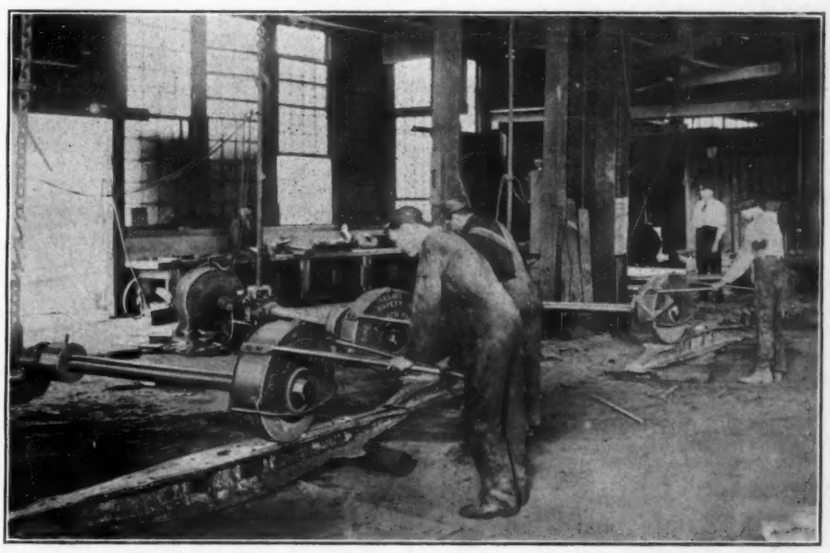


FIG. 5—ANOTHER VIEW IN THE PITTSBURG STEEL FOUNDRY CO.'S PLANT, SHOWING MOTOR-OPERATED, DIRECT-CONNECTED GRINDERS, AND THE EASE WITH WHICH THEY CAN BE HANDLED IS APPARENT

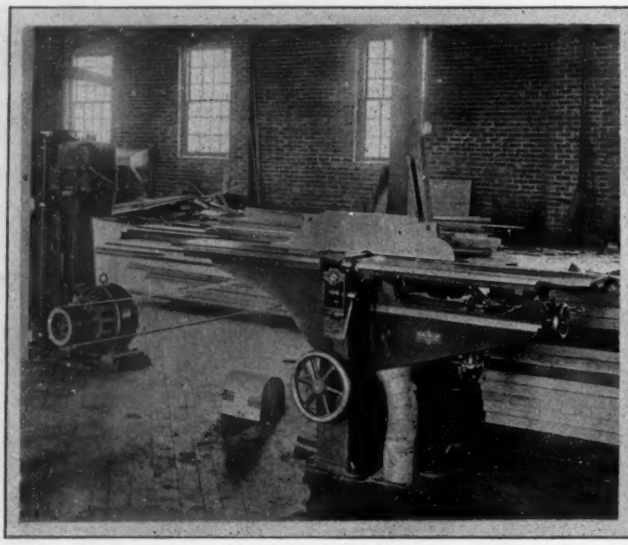


FIG. 6—A MOTOR-DRIVEN PLANER IN THE PATTERN SHOP

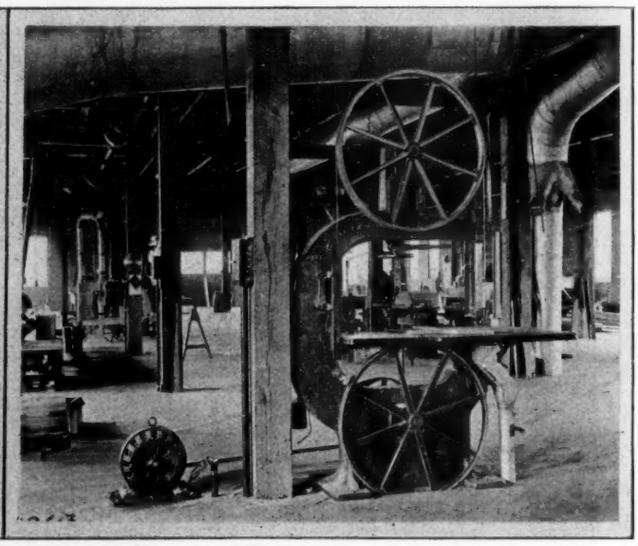


FIG. 7—MOTOR-DRIVEN, PATTERN SHOP BAND SAW

and the power station capacity ranges from 300 to 500 kilowatts with the average distributing distance approximately 600 feet, the 250-volt, direct current system offers many advantages. Direct current motors can be used for all the applications and as no converting apparatus or exciters are necessary, the power station equipment is simplified.

Direct current series motors have a speed torque curve, especially suitable for crane work as the speed varies with the load. The motor gives rapid acceleration, due to large starting torques obtainable and it will stand excessive overloads. Direct current, adjustable speed motors are especially suitable for machines such as the lathe and drill press, which may require a speed range of two to one, or even more, and also for cupola blowers where speed change is desirable.

As the distance of distribution of power is short, 250 volts is sufficient to permit a low line loss with a reasonable cost for copper.

Alternating Current Advantages.

In the case of foundries producing small castings, the overhead traveling crane is seldom used and the floor machinery constitutes the principal motor applications. The alternating current system offers many advantages for this class of foundry, namely, simplified and more durable construction of motor, better lighting system and other advantages.

At this point it would be well to discuss the question of power proposition as offered by the large central station companies. It will be noted that the foundry power load is very fluctuating, giving approximately a 50 per cent load on the station. This means exceedingly low steam economy, especially with reciprocating engines. The foundry station is comparatively small and is in operation 24 hours a day. Therefore, it should contain a spare unit for emergencies.

Central Station Power.

All of these factors tend towards a high cost of power. The central station being of large capacity does not feel the direct effects of the load fluctuations, for the peaks of the various loads tends to overlap in such

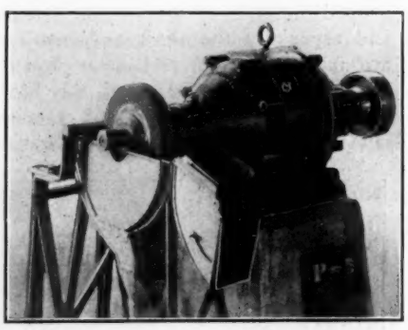


FIG. 8—MOTOR DESIGNED FOR THE DIRECT MOUNTING OF GRINDING WHEELS ON EACH END OF THE SHAFT

a manner that a more uniform load condition exists. The load being practically continuous, improves this load factor. Thus, to the small plant, especially, the central station companies can often offer good inducements to purchase power.

Lighting is the principal load of the central station and the system most generally adopted is alternating current, 3-phase, 60-cycle. The power is either generated at a high voltage or is stepped up to a high voltage by means of transformers for economy of transmission. The alternating current system thus offers a decided advantage over the direct current system, when the question of transmission is much of a factor.

In the case of an existing plant having direct current motors installed, a rotary converter could be used to convert the power to direct current of suitable voltage. If the proposition relates to a new plant, there a more economical plan will be to use alternating current motors, although in a majority of the cases, it will be necessary to reduce the voltage. Usually the transmission voltage will be over 1,000 volts and transformers should be used to give 240 volts for distribution within the foundry. Considerable discussion has taken place between the electrical engineers of the iron and steel industry during the last two years regarding the most suitable voltage for inner works distribution and from a safety standpoint, it has been decided that 240 volts for 220-volt alternating current motors and 250 volts for 230-volt direct-current motors should be used and these voltages are becoming standard for this class of industry.

Standard Voltages.

The alternating current, squirrel cage, wound motor offers several advantages over the direct current motor for the floor machines, with the exception of the applications requiring adjustable speed, such as machine tools and for these applications it would be best to install a small motor generator set to give direct current. The advantages are as follows: Simple construction of windings and es-

pecially the rotating element with the attendant advantages of absence of commutator and wearing parts, such as brushes; ability to stand excessive overloads. These several advantages mean less up-keep cost and in a general way, more reliability.

While it is true that the characteristics of the direct current series motor is more suitable than the alternating current motor for crane service, very satisfactory results are given by the latter and in the case of a foundry purchasing power from a certain station, where it would be necessary to install converting apparatus, to obtain direct current, the increased cost of installation and loss of efficiency will hardly warrant installing a mixed system.

Some of the principal reasons for purchasing energy from the central station are as follows:

Investment for power apparatus limited to motors and wiring. In new installations, the cost is usually less than for mechanical systems of power distribution.

No investment required for land, or floor or space for power equipment.

No investment for power plant and repair parts.

The money saved by the lack of power house may be invested in the business where it will return its share of profit.

The production and marketing of the power is a sole reason for the existence of the central station, consequently every effort is made by the management to improve the service in every possible detail; power is absolutely reliable.

There is no possible chance for complete shut-down due to an accident to any machine. The reliability of supply is in no respect dependent on one man's watchfulness; seldom is a skilled workman required in the factory to care for the power equipment.

No high pressure boilers and no opportunity for explosion.

No delays, due to insufficient power.

Cost of overtime work per machine no more than for the regular operation.

The power cost is directly proportional to the factory output, since the power consumed is proportional to the work done.

No increase in power plant equipment required for factory extensions; the central station takes care of all increases in the demand for power.

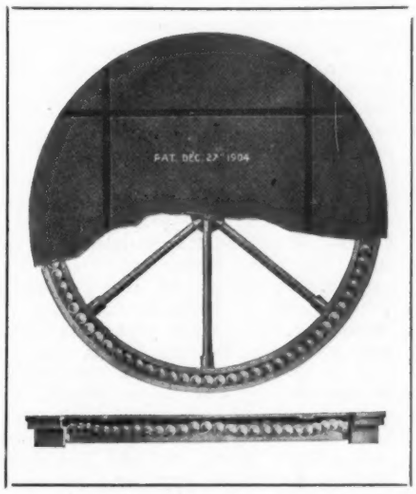
Electric power may be tried for a more or less extended period, and proven satisfactory, without making expensive changes in the equipment, before extending it throughout the factory.

Owing to the larger size and to the use of voltage regulating the devices, central stations provide a steady voltage without undesirable fluctuations.

Referring again to the subject of power supply, the coal consumption (using good grade of coal) is 10 to 12 pounds per kilowatt hour for the average condition of load, varying from 30 to 125 per cent and averaging 50 per cent. This means that the efficiency is about 25 per cent less than a uniform load, ranging from three-fourths to full load. For these conditions, especially the auxiliary pole, direct current generator offers several advantages—the commutating conditions are greatly improved and the practical overload capacities are increased.

While it is possible to obtain a load which will be uniform within 5 or 10 per cent by means of a storage battery, it is questionable whether it offers a paying advantage for the average conditions. However, in the case of one plant inspected, the crane capacity is exceptionally high, including 20 cranes of 358 tons total and the total of floor motors is 600 horsepower.

In the case of plant enlargement, it would be well to consider the low pressure turbine using the exhaust



PLAN AND SECTIONAL VIEWS OF BALL BEARING TURNTABLE

steam from the existing engines. By this means, at least 75 per cent additional power can be obtained without an additional coal consumption.

Analysis of Power Economies.

It is very doubtful if the average steam plant of the foundry, under the most favorable conditions, regarding price of fuel, etc., can produce the power for less than 2 cents per kilowatt hour and for the majority of the plants, the cost will be even higher. Only a few of the plants are equipped with instruments for measuring the total power and for a new plant especially, it is recommended that integrating meters be installed and an accurate record of power conditions be kept. It is not sufficient to base an estimate for a particular plant on the records of a few days, but rather on the average of several months. Other data relating to power costs should be recorded and a definite cost established. Until this is done, the question of power economies cannot be analyzed with any degree of accuracy and the advantages of the various suggestions which are sure to be considered from time to time, established.

One of the most important applications of electricity in the foundry is that of lighting. The natural conditions of dust and dirt as well as steam in the air, the crowded condition of the floor and the preponderance of dark surfaces, present difficulties, which make satisfactory lighting for the foundry a very much involved question. The light must be well distributed and of good intensity, and necessarily penetrating. These requirements must be met to insure the efficiency and accuracy of the work of molding especially, and as a precaution against accident in the general work of the foundry, particularly on the pouring floor.

Manufacturers in general are giving this subject of lighting much more consideration than ever before, for the illuminating engineer has been wonderfully successful in proving the effectiveness of his service.

Serpentine Track Turntable

A serpentine track turntable, built for any gage of track, by the Canton Foundry & Machine Co., Canton, O., is shown in the accompanying illustration. The serpentine ball bearing race, it is claimed, eliminates fully 75 per cent of the friction as the weight of the table rests only on the balls at the high points, the remaining balls rolling down into the pockets that are filled with lubricating oil. The ball bearing race is amply protected to prevent the accumulation of dust and dirt. As these tables are only six inches in depth they can be set in any floor without resorting to extensive excavations. The balls are 2, 2½ and 3 inches in diameter, according to size of the table. The top of the table is checkered and is furnished with plain or with grooved track. The table is of cast iron construction with the exception of the wrought iron spokes and the semi-steel ball bearings. These tables are made in three styles in the following diameters: 3 feet, 6 inches; 4 feet, 5 feet, 6 feet and 8 feet and for any gage track from 18 to 48 inches and upward.

New Catalogs

DIRECT CURRENT MOTORS.—In a recently issued booklet, the Fort Wayne Electric Works of the General Electric Co., Fort Wayne, Ind., describes and illustrates its line of Northern type, direct current, series, reversible motors. This motor, which has been on the market for many years, now contains a number of recently introduced improvements which are fully explained in the bulletin.

CARS AND TRUCKS.—The Chase Foundry & Mfg. Co., Columbus, O., in a supplement to its catalog No. 11, describes its line of roller bearing cars and trucks. These cars are of steel construction and are designed for the following purposes: For transporting cement block, tile, coke, pig iron, etc.; for drying cores, brick, etc. They are made with open or closed tops, are provided with stationary and removable decks and can be built for any gage. The line includes transfer cars, dump cars, turntables, switches, etc.

GAS-ELECTRIC MOTOR CAR.—In a recently issued bulletin, the General Electric Co., Schenectady, N. Y., describes and illustrates its line of gas-electric motor cars of the double-truck type. These cars are designed to serve as adjuncts to the regular equipments of steam roads. The prime mover is a gas engine, the energy from which is transmitted to the driving wheels by means of an electric drive, thus avoiding any direct mechanical gearings. The engine is direct-coupled to an electric generator. The car bodies can be furnished to meet a wide range of requirements.

DISC VENTILATING FANS.—The American Blower Co., Detroit, has issued a bulletin in which disc ventilating fans are described. This fan is light in weight and is capable of delivering large volumes of air with a power consumption below that ordinarily required. It runs at a high speed and throws the air current straight ahead. The blades, ten in number, are unusually broad and are riveted to a large, central disc which prevents a back flow of air through the center when working against pressure. A chart showing the relative capacity and mechanical efficiency of this fan as compared with other fans, is included in the bulletin.

INCANDESCENT LAMPS.—The General Electric Co., Schenectady, N. Y., has issued a bulletin devoted to its line of metallized filament incandescent lamps. The filaments in these lamps are composed of a quality of carbon which is obtained by subjecting the ordinary carbon filament to a very high temperature in an electric furnace. This heat renders the filament more refractory and, as the quality of light from an incandescent body increases rapidly with its temperature, it is claimed that the higher temperature at which the improved lamp can be operated results in the production of 25 per cent more light than the ordinary carbon filament produces for the same life and energy consumption.

RECORDING INSTRUMENTS.—A condensed catalog, devoted to its line of recording instruments, has just been issued by the Bristol Co., Waterbury, Conn. These instruments, which have been gradually developed since 1889, now include thermometers, thermometer-thermostats, electric pyrometers, pressure and vacuum and combination gages, water level gages, differential pressure gages, voltmeters, electric and mechanical time recorders, long distance tachometers, radii averaging instruments, counters and other recording instruments. The present catalog is designed to furnish sufficient data in a condensed form to enable customers to conveniently specify their orders.

RADIATORS AND BOILERS.—The Shirley Radiator & Foundry Co., Shirley, Ind., has issued a catalog devoted to its line of house heating boilers and radiators. The former include water and steam boilers of the round and square sectional as well as the heavy duty type. The line of radiators is very complete, including the usual one, two, three, four and five column designs, both plain and ornamented; wall, window and corner radiators, etc., as well as the attachments, such as brackets, bases, pedestals, etc. The Shirley company also manufactures tank heaters and laundry stoves. The catalog includes valuable data on calculating the amount of radiation necessary, the radiating surface of wrought iron pipe and the economical operation of heating systems.

MOTORS AND BUFFING LATHES.—The Emerson Electric Mfg. Co., St. Louis, has issued three bulletins which illustrate and describe the line of single-phase induction motors and the electric buffing lathes made by that company. The former are of the full-load, start-clutch type and are made in sizes from 1-20 to ½ horsepower in capacity. These motors are also furnished back-geared with countershaft in sizes of 1-3 and ½ horsepower capacity. The buffing lathes are designed for direct or alternating current and can be employed for polishing and light grinding. They are furnished complete with switch, bearing caps and a set of sample buffs. On direct current, the lathes can be operated at speeds of 1,600, 2,400 and 3,400 revolutions per minute respectively.

BRONZE.—The Ansonia Brass & Copper Co., Ansonia, Conn., has issued a booklet devoted to Tobin bronze products. This metal possesses a number of remarkable characteristics and these, together with records of tests showing the tensile strength, specific gravity, torsional, crushing and transverse strength as well as the behavior of the metal under acid and steam tests, etc., are fully recounted in this booklet. This bronze is furnished in these forms: Turned and straight pump piston rods and yacht shafting; rolled plates for rudders, centerboards, pump cylinder linings, condenser tube sheets, fin keels and yacht plates, etc.; flat, round square and hexagonal bars; bars for forgings; seamless tubing for condensers and boilers, and pump linings. Included in the booklet are tables of weights of the bronze in the various forms as well as other interesting information.

STEEL DERRICKS.—In a 54-page catalog, issued by the Carnegie Steel Co., steel derricks and drilling rigs for oil, gas, salt and other wells, mineral exploration work, etc., are illustrated and described. The derricks are so constructed as to permit of their erection without any special equipment in the way of scaffolding and to reproduce, as far as possible, in steel the identical features in wooden construction which have been approved by many years of use. Three types of derricks are illustrated including the Woodworth standard, the Woodworth Oklahoma and the Yorke standard. These derricks are similar in the use of structural steel angles for the legs, in the arrangement of crown blocks and the construction of the ladders. The three types of derricks are made regularly in four different heights, 55, 64, 72 and 80 feet. The 55-foot derrick is made with seven panels, the 64-foot with eight, the 72-foot with nine and the 80-foot with ten. The height of the bottom panel in all cases has been placed at 12 feet and the second panel at eight feet.

CRANES AND HOISTS.—The Chisholm & Moore Mfg. Co., Cleveland, has just issued a new 1911 catalog containing 64 pages and illustrating and describing in full its chain and trolley hoists and hand power cranes with all accessories. These hoists are designed to meet all needs in all lines for which they are adapted, being constructed so that they can be used to good advantage in foundries, structural shops, machine shops or in any place where both light and heavy lifting are required. Among the equipment described may be mentioned high speed chain and trolley hoists, anti-friction chain hoists, differential pulley blocks, adjustable malleable frame trolleys, geared and plain yoke trolleys, hand power traveling cranes and anti-friction door hangers. The cuts throughout illustrate the use of these cranes in handling guns of large bore as well as shells of large and small dimensions. The catalog is well arranged in both detail and general make-up and the cuts are especially clearly outlined.

RECORDING WATER LEVEL GAGES.—The Bristol Co., Waterbury, Conn., has issued a bulletin devoted to its line of recording water level gages. These instruments are designed for use is securing continuous records of water level at points where it is necessary or desirable to locate the instrument above the water's surface. Thus they can be employed very advantageously in automatically recording the depths of water or other liquids in tanks, reservoirs, rivers, canals, sewers, forebays and tail races; in determining the depth and rate of flow of water over weirs, and in recording the volumes of liquids in tanks. The gage consists of a sensitive bulb, a flexible tube and a recording instrument, the latter being commonly provided with a seven-day chart. The bulb, which is placed in the water, is usually screwed or bolted to a vertical plank. Thus the changes in pressure on the bulb, due to the variations in level of the water, are transmitted to the recorder by means of an air column in the tube. The new gages are furnished with or without weather proof coverings, and recording charts may be obtained to suit special purposes.

PLANERS.—Planers driven by direct-connected, variable speed reversing motors are described in a handsomely-illustrated catalog, issued by the Niles-Bement-Pond Co., New York City. The application of reversing motor drive for planers is noteworthy on account of its simplicity and because of the increase in tool efficiency obtained by its use. The increase in the number of variations of cutting and return speeds available makes any given size machine suitable for a very wide class of work. In addition, a positive connection between table and driving motor results in remarkable accuracy in the length of table stroke, decreasing the over-run of the tools and making it practical to cut into corners. The standard planers built by this company are designed to plane from 30 inches square to 14 feet square between the uprights and under the arch and the tables may be of any desired length. An interesting illustration is included which shows the cuts taken with a 76-inch Pond planer, driven by a 30-horsepower reversing motor. The planers illustrated are the following sizes: 30-inch, 36-inch, 42-inch, 48-inch, 54-inch, 60-inch, 72-inch, 84-inch, 96-inch, 126-inch and 168-inch. A frog and switch planer is also described which has been developed for the heaviest class of work in steel mills, where absolute accuracy is not necessary. Though especially designed for planing switch parts, this planer may be economically used wherever rapid production is more desirable than exact reproduction.

IRON AND STEEL SECURITIES

A violent downward movement in prices with losses extending to 3 and 5 points for the prominent issues, characterized last week's business on the New York stock exchange. This movement was largely caused by developments in plans for the reorganization of the Standard Oil Co. and the American Tobacco Co. Railway issues were weak.

On Monday, prices were firm and closed higher; the grain markets were lower, and cotton declined to the low price on the movement; foreign markets were firm. On Tuesday, the market was more active but closed ½ to 2½ per cent lower; leading foreign markets were weak and English consols again declined. On Wednesday, stocks were active and weak; Standard Oil and American Tobacco stocks each broke about 20 points and Allis-Chalmers lost several points. Thursday, stocks showed a further decline. Friday, sales were more numerous, shares of United States Steel being most active, but prices declined 2 to 4 points. Trading on Saturday was active but prices declined to the lowest on the movement, with a slight rally toward the close.

Money on call ranged from 2½ to 2 per cent. Time money was firm at the opening, with fractional advances but, because of the light demand, dealers made small concessions toward the close. The statement of the actual condition of clearing house institutions showed loans decreased $20,405,000; net deposits decreased $32,204,000; total reserve $434,220,000; excess of reserve $17,906,350, an increase of $160,900, and the percentage of reserve, 26.0, compared with 26.2 the previous week. Non-member banks and trust companies showed loans decreased $1,681,800; net deposits decreased $2,587,000; reserve decreased $573,800, and the percentage of reserve, 19.2, against 19.3 the week previous. Commercial failures for the week were 232, compared with 262 the preceding week, and 229 the corresponding week last year. Bank clearings for the week showed a slight increase over the preceding week, and 5.1 per cent over last year. Shares were sold to the number of 2,454,600, compared with 1,714,500 the preceding week, and 2,355,650 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $10,964,000, compared with $12,718,000 the preceding week, and $6,629,000 the corresponding week last year.

	Closing Quo. Aug. 5	Changes in week	Annual Meeting date 1911.	Stock Outstanding	Basis	Dividend Last	Dividend Pay Date	Dividend Last
Allis-Chalmers	6¼	—2¼		$19,820,000				
Allis-Chalmers, pr	23	—5	Nov. 2	16,150,000	7 cum.	1¾ Q.	Feb.,	1904
American Can	10	—1½	Feb. 1	41,233,300		1¾ Q.		
American Can, pr	84½	—2¾		41,233,300	7 cum.	1¾ Q.	July,	1911
Am. Car & Fdy	54	—2⅜	June 29	30,000,000		½ Q.	July,	1911
Am. Car & Fdy., pr	117½	— ⅝		30,000,000	n. c.	1¾ Q.	July,	1911
American Loc	38⅛	+ ⅜	Oct. 17	25,000,000	5	1¼ Q.	Aug.,	1908
American Loc., pr	105	.....		25,000,000	7 cum.	1¾ Q.	July,	1911
American Ship	64	.....	Oct. 11	7,600,000	4	2 Q.**	June,	1911
American Ship, pr	111	.....		7,900,000	7 cum.	1¾ Q.	Oct.,	1911
Am. Steel Foundries	38	—1	Dec. 7	17,184,000		1 Q.	May,	1911
Barney & Smith	20	.....	June 6	2,000,000	4	1 Q.	Dec.,	1907
Barney & Smith, pr	87	.....		2,500,000	8 cum.	2 Q.	June,	1911
Bethlehem Steel	32½	—3½	*April 4	14,862,000				
Bethlehem Steel, pr	61½	—2⅞		14,908,000	7 n. c.	¾ Q.	Feb.,	1907
Cambria Steel	45⅜	—1⅜	Mar. 21	45,000,000	5	1¼ Q.	Aug.,	1911
Cambria Iron	44	.....		8,468,000*	4	2 S. A.	Apr.,	1911
Chicago Pneumatic Tool	49	—2¾	Feb. 20	6,485,800	4	1 Q.	July,	1911
Colorado Fuel	30⅛	—3⅜	Oct. 16	34,235,500		1¾ Q.	Apr.,	1902
Crucible Steel	12	—1	Oct. 18	24,578,400		3½.		
Crucible Steel, pr	81¼	—1¼		24,463,500	7 cum.	1¾ Q.	June,	1911
Empire Steel	5	.....	Feb. 22	1,254,770				
Empire Steel, pr	50	.....		2,500,000	6 cum.	1 S. A.	July,	1911
Fay & Egan	70	.....	Feb. 21	1,000,000	6 cum.	3 S. A.	Feb.,	1911
Fay & Egan, pr	110	.....		1,000,000	7 cum.	1¾ Q.	May,	1911
General Electric	154½	—7¾	May 9	65,179,600	8	2 Q.	July,	1911
Harbison-Walker	54½	.....	Jan. 16	18,000,000		½ Q.	June,	1911
Harbison-Walker, pr	99	+1		9,600,000	6 cum.	1½ Q.	July,	1911
International Pump	38⅝	—2⅛	Dec. 12	17,762,500		1 Q.	Nov.,	1910
International Pump, pr	87½	.....		11,350,000	6 cum.	1½ Q.	Aug.,	1911
Lackawanna Steel	37½	.....	Mar. 8	34,978,000				
Lake Sup. Corp	27	.....	Oct. 4	40,000,000				
New York Air Brake	75	.....	Mar. 8	10,000,000	6	1½ Q.	July,	1911
Niles-Bement-Pond	94	.....	Feb. 8	8,500,000	6	1½ Q.	June,	1911
Niles-Bement-Pond, pr	104	.....		2,000,000	6 cum	1½ Q.	May,	1911
Otis Elevator Co	74	+3	Mar. 20	6,375,000	1	1 Q.	July,	1911
Otis Elevator Co., pr	100½	+ ½		6,310,000	6 n. c.	1½ Q.	July,	1911
Pa. Steel	60	.....	May 8	10,750,000				
Pa. Steel, pr	106	.....		16,500,000	7 n. c.	3½ S. A.	May,	1911
Pittsburg Coal Co	19¼	—2⅛	Feb. 10	28,104,600				
Pittsburg Coal Co., pr	85	—5⅛		27,071,800	7 cum.	1¾ Q.	July,	1911
Pressed Steel Car	34⅝	—2½	Feb. 15	12,500,000		1 Q.	Aug.,	1904
Pressed Steel Car, pr	102¾	+ ¼		12,500,000	7 n. c.	1¾ Q.	Aug.,	1911
Pullman	159	—3	Nov. 8	120,000,000	8	2 Q.	Aug.,	1911
Railway Stl. Spring	35	—1¾	Mar. 2	13,500,000	2	1 S. A.	Oct.,	1908
Railway Stl. Spring, pr	101½	.....		13,500,000	7 cum	1¾ Q.	June,	1911
Rep. Iron & Steel	28½	—1⅜	Oct. 18	27,191,000				
Rep. Iron & Steel, pr	92½	—2		25,000,000	7 cum.	1¾ Q.	July,	1911
Sloss-Sheffield	49	— ½	Mar. 15	10,000,000	5	1¼ Q.	Sept.,	1910
Sloss-Sheffield, pr	112	.....		6,700,000	7 n. c.	1¾ Q.	July,	1911
U. S. Pipe & Fdy. Co	15⅜	— ⅝	June 28	12,106,300		1 Q.	Dec.,	1910
U. S. Pipe & Fdy Co., pr	53⅛	+1		12,106,300	2	1¼ Q.	June,	1911
U. S. Steel	74⅜	—4¾	April 17	508,302,500	5	1¼ Q.	Sept.,	1911
U. S. Steel, pr	117	—3		360,281,100	7 cum.	1¾ Q.	Aug.,	1911
U. S. Steel 5s	104¾	— ⅝		463,798,000	5			
Va. Iron, Coal & Coke	88¾	.....	Sept. 19	9,073,680		5. †	Oct.,	1907
Westinghouse Electric	67	—6⅜	July 26	3,998,700*		1¾ Q.	July,	1911
Westinghouse Air Brake	152	— ½	Oct. 3	13,750,000*		5 Q. ‡	July,	1911

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Includes 2½ regular, 1½ extra and 1 special

Copper Stocks.

New York.—Amalgamated Copper closed 63½, a net loss of 3½ points.

Boston.—Butte Coalition closed 18, a net loss of ⅛; Calumet & Arizona closed 54¾, a net loss of 2¼; Calumet & Hecla closed 440, a net loss of 8; North Butte Mining closed 30⅝, a net loss of 1⅜; Quincy Mining closed 73, no change.

Financial Notes.

The American Radiator Co. has declared the regular quarterly dividends of 1¾ per cent on its preferred stock, payable Aug. 15, and of 2 per cent on its common stock, payable Sept. 30.

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July	5,864
August	5,875
September	5,895
October	5,955
November	5,993
December	6,026
January, 1911	6,058
February	6,072
March	6,091
April	6,108
May	6,112
June	6,124

August 10, 1911

Increasing Open-Hearth Capacity

A feature of importance in connection with the building of new open-hearth steel plants in the western Pennsylvania territory this year is the fact that three large steel companies, which heretofore have not been manufacturers of open-hearth steel, have just completed, or have authorized, the construction of open-hearth steel plants, while the open-hearth steel capacity of two other independent companies is being increased, one of the latter plants being a strictly new works, while the other is an addition to existing works.

The Republic Iron & Steel Co., which has a total annual capacity of 500,000 gross tons of Bessemer steel ingots, 450,000 tons of Bessemer steel billets and 600,000 tons of rails or sheet and tin plate bars, has just completed and placed in operation eight 60-ton open-hearth steel furnaces in the Youngstown, O., district. A description of this plant will appear in an early issue of THE IRON TRADE REVIEW.

The Pittsburg Crucible Steel Co., a subsidiary of the Crucible Steel Co. of America, which in February of this year took over the blast furnaces and other holdings of the Midland Steel Co. at Midland, Pa., has received bids and is expected to award contracts this week for six or eight open-hearth steel furnaces. The Youngstown Sheet & Tube Co. is having plans prepared and in the very near future will ask for bids on six open-hearth steel furnaces to be built at Youngstown. The three above mentioned companies have not been manufacturers of open-hearth steel in the past, the Pittsburg Crucible Steel Co. being an entirely new steel manufacturer in the field, its predecessor, the Midland Steel Co., having confined its operations to the production of pig iron.

In addition to the above, the Jones & Laughlin Steel Co. has recently completed four Talbot open-hearth steel furnaces at Aliquippa, Pa. This company has been a manufacturer of open-hearth steel since 1895, the first basic steel having been made on Sept. 28, of that year. The Pittsburg Steel Co., which now has 12 open-hearth steel furnaces at Monessen, Pa., has authorized the construction of four additional open-hearth steel furnaces at that place.

All of this indicates that, at least in open-hearth manufacture, the Pittsburg district is not losing ground.

Our Foreign Commerce

Iron and steel exports in the fiscal year just closed made a tonnage record by a large margin, passing the best previous fiscal year, 1910, by 37.2 per cent, and the best calendar year prior to 1910 by 44.0 per cent. The exports totaled 1,910,301 gross tons, or 10,000 tons in excess of the forecast made in this summary a month ago.

Exports of the tonnage lines by fiscal and calendar years have been as follows:

	Fiscal.	Calendar.
1902	495,661	372,398
1903	302,492	326,590
1904	676,590	1,167,710
1905	1,123,580	1,010,255
1906	1,331,323	1,325,740
1907	1,229,245	1,301,979
1908	1,161,270	864,242
1909	1,059,239	1,243,462
1910	1,396,395	1,535,698
1911	1,910,301	.....

Exports in the month of June amounted to 173,837 tons, a decrease of about 5,000 tons from May. There have been wide fluctuations in our monthly exports of late, whereas until recently monthly exports showed considerable uniformity. Last November, however, exports jumped to 154,725 tons, when the best previous month had been 137,688 tons. For four months, November to February inclusive, they averaged about 150,000 tons a month, after which they jumped to 215,671 tons in March and to 227,835 tons in April, whereupon a recession to about 175,000 tons occurred for May and June. The average per month in the fiscal year was 159,000 tons, so that it will be observed that while the year made a new record by a large margin, we have at times exported at much higher rates.

Comparing the changes in individual items from the fiscal year 1910 to the fiscal year 1911, it is observed that in general the increase was uniform among the finished steel products, conforming closely to the 37.2 per cent increase shown in the total. The crude materials, however, showed a great variation. Scrap, pig iron and billets, sheet bars, etc., showed a much larger proportionate gain, scrap tripling in tonnage and pig iron almost doubling, while billets, sheet bars, etc., increased 260 per cent. If they had increased in the same ratio as the

total, they would have amounted to about 70,000 tons in the past fiscal year, the 152,647 tons actually shown being more than double this. Wire rods, on the other hand, showed a decrease, although small in point of tonnage, from 24,943 tons to 17,758 tons.

Total Value of Exports.

The total value of all iron and steel exports made a new record in the fiscal year, the figures for fiscal years being as follows:

1907	$181,530,871
1908	183,982,182
1909	144,951.357
1910	179,133,186
1911	230,725,351

A large part of the increase in total value was of course due to the increase in the tonnage lines noted above, but the exports of non-tonnage lines all showed increases of greater or less amount, including hardware, cutlery, machinery, etc.

Iron Ore Imports.

Imports of iron ore by months are shown in the following table:

	1909.	1910.	1911.
January	105,233	284,823	102,600
February	67,749	170,427	94,820
March	108,676	163,633	134,785
April	74,782	206,135	133,900
May	97,393	240,833	217,467
June	124,714	193,415	118,296
July	172,316	248,810	.....
August	209,855	282,949	.....
September	164,613	208,892	.....
October	179,505	219,571	.....
November	174,976	197,833	.....
December	222,609	173,710	.....
Totals	1,691,957	2,764,741	801,863

The sources of iron ore imports are shown in the following table, which gives the imports in June and in the six months of the year ending with June:

	June.	Six months.
Spain	.....	88,774
Sweden	15,282	112,529
Canada	12,471	20,702
Newfoundland	.....	34,410
Cuba	88,030	538,301
Other countries	2,513	6,953
	118,296	801,863

The Lakeside Forge Co., Erie, Pa., the incorporation of which was recently noted, advises that it has purchased the plant of the Lakeside Forge & Wrench Co., of that place, for the purpose of continuing the business on a larger scale. The new concern will manufacture drop forge wrenches and forgings of all kinds, including special wrenches, automobile parts, and gun and pistol forgings. Several drop forge hammers will be added to the equipment and the plant generally overhauled.

Program of Lake Superior Mining Institute

The committee in charge of the sixteenth annual meeting of the Lake Superior Mining Institute has arranged a program for the meeting, which begins Tuesday, Aug. 22, and continues through until the evening of Aug. 24. The visitors will arrive and be received at Crystal Falls, Tuesday morning, and in the afternoon will visit the Hollister mine and inspect the new ore drier and the Tobin and Bristol mines. At this town, there will be an entertainment and luncheon by the Crystal Falls Commercial Club, to be followed by a business session. Wednesday, the party will leave Crystal Falls in automobiles en route to the Iron River district, visiting a number of mines. At Swanson, concrete shaft sinking will be seen, and in the evening there will be an entertainment and luncheon by the Iron River Commercial Club, to be followed by a business session. On Thursday, Dickinson county points will be visited. At Loretto, changes in the river course and mining in the old river bed will be viewed. In the afternoon, there will be an automobile trip from Vulcan to Norway and Iron Mountain, visiting the Chapin mine, construction of dam at Twin Falls, and other points of interest. The following is a partial list of papers to be presented at the meeting:

"Accidents in the Transportation, Storage and Use of Explosives," by Charles S. Hurter, Duluth, Minn.; "Some of the Safety Devices of the Oliver Iron Mining Co.," by Alexander M. Gow, Duluth, Minn.; "Tobin Mine Sub and Caving System," by Fred C. Roberts, Crystal Falls, Mich.; "Top Slicing and Caving System in Stambaugh District," by W. A. MacEachron, Iron River, Mich.; "Square Set Mining," by Floyd L. Burr, Vulcan, Mich.; "Check System of Time Keeping," by James D. Vivien, Crystal Falls, Mich.; "Boiler Setting and Coal Handling," by J. S. Jacka, Crystal Falls, Mich.; "Electrical Operating Plants of Penn Iron Mining Co.," by Frank H. Armstrong, Vulcan, Mich.; "Social Surroundings of the Mine Employe," by Charles E. Lawrence, Iron Mountain, Mich.; "A Diamond Drill Core Section of the Mesabi Rocks—No. IV," by N. H. Winchell, Minneapolis, Minn.; "Block Caving on the Menominee Range," author to be assigned; "Surveying and Sampling Diamond Drill Holes," by Edwin E. White, Ishpeming, Mich.; and "The Relation of Mining Interests to the Prevention of Forest Fires," by Thomas B. Wyman, secretary-forester, Munising, Mich.

NEW WIRE ROD MILL

Finished and Will Double Capacity of Aliquippa Plant.

The Jones & Laughlin Steel Co., Pittsburg, has completed its new wire rod mill at Aliquippa, Pa., which will double the capacity of the plant at that place. The contract for the new mill was awarded about the middle of March of this year to the Morgan Construction Co., Worcester, Mass., and was to have been completed by July 1. The mill, which is a duplicate of the one completed at Aliquippa, Pa., in August, 1910, is of the continuous type and consists of 16 trains of rolls. It will roll billets 1¼ inches square by 30 feet long.

The completion of this mill will give the Jones & Laughlin Steel Co. an annual output of 200,000 tons of rods. Of this amount, 150,000 tons will be used at the company's wire mills and 50,000 tons will be sold in the open market.

Retains Former Name

The plant of the E. G. T. Colles & Co., Chicago, manufacturers of feedwater heaters, water purifiers, separators and steam specialties, has been sold to A. C. Loomis, also of Chicago, but the former name of the company will be retained. The purchase includes all patents, drawings and patterns of the former company and its good will and trade name. The new company has been capitalized at $50,000, but as yet the new organization has not been perfected. A probable change in the nature of the business of the concern will be the establishing of agencies throughout the country, a plan which was not used by the former company.

Standard Welding Co.'s Increase of Capital

The Standard Welding Co., of Cleveland, has increased its capital stock from $500,000 to $1,000,000, the increase coming as a result of the growth of the welding industry in and around Cleveland, which has been brought about by the large demand for castings and welded parts made by automobile manufacturers. The company has also remodeled some parts of its plant and added several new buildings during the past year.

Roosevelt Assumes the Entire Responsibility

For Allowing Steel Corporation to Absorb Tennessee Company—President Topping Calls Ore Freight Rates Excessive—President Schwab an Interesting Witness

Leaning forward in his chair with all the vigorous intensity of his nature marshalled in the recital, Theodore Roosevelt for the first time in public told the Stanley congressional committee in New York, Saturday, Aug. 5, the circumstances and reasons why as president of the United States he had followed the course he did in the panic days of 1907 and had declined to interpose any legal objections to the purchase of the Tennessee Coal, Iron & Railroad Co. by the United States Steel Corporation. Col. Roosevelt spoke with characteristic force and emphasis in every word, using some of his famous gestures and facial expressions to drive home the force of his remarks.

"I wish it distinctly understood that I acted wholly upon my own initiative and that the responsibility for the action was wholly mine," said he, prefacing all his statements.

Then followed quickly in trip-hammer style:

"In my judgment, I would have been derelict in my duty and I would have been unworthy as a public officer if in that extraordinary crisis I should not have acted as I did." Later he said, "It would have been well-nigh criminal to the people of the United States, if I had not done exactly as I did."

At the suggestion that the now famous visit to Washington of Judge E. H. Gary and H. C. Frick as representatives of the Steel Corporation might have had other motives of greater importance to that interest than the allaying of the crisis in New York, and to the query whether he had ever learned subsequently that any misrepresentations were made to him upon this occasion, Col. Roosevelt shot back this reply:

Not Question of Motive.

"It isn't necessary now nor was it necessary then for me to form any judgment as to whether the representatives of the Steel Corporation were anxious to get possession of the Tennessee Coal, Iron & Railroad Co., because of benefit to themselves or whether they were only anxious to save the situation caused by the panic. I have never found it necessary to try in my own mind to fix the relative weights of the motives in their minds. I believed then their statements to be accurate and from all information I have received since, I now believe them to be accurate and in accordance with all I had heard from New York at the time. Insofar as the influence of the action and its effectiveness, the judgment of the public stands. Events bore out and justified what I had been told and have borne out what I did."

The appearance of ex-President Roosevelt before the committee was in response to a written invitation from chairman Stanley extended the previous day, but no subpoena was issued. The fact that he had been invited was carefully guarded by the committee and his appearance accordingly created much surprise. Col. Roosevelt said he was glad of the privilege of setting right before the public a matter about which there had been so much misrepresentation and false statement. He asked permission to present a hastily prepared statement covering the visit of Messrs. Gary and Frick to Washington and his actions bearing upon the Tennessee transfer.

Submits Prepared Statement.

This statement describes the interview in much the same way as Judge Gary described it. It then adds:

Mr. Bonaparte said that my answer was the only proper answer that could have been made, having regard both to the law and to the needs of the situation; he stated that the legal situation had been in no way changed, and that no sufficient ground existed for prosecuting the Steel Corporation. But I wish it distinctly understood that I acted purely on my own initiative, and that the responsibility for the act was solely mine.

Quick Decision Needed.

It was necessary for me to decide on the instant before the stock exchange opened, for the situation in New York was such that any hour might be vital, and failure to act for even an hour might make all subsequent effort to act utterly useless. From the best information at my disposal, I believed (and believe) that the addition of the Tennessee Coal & Iron property would only increase the proportion of the Steel Company's holdings by about 4 per cent, making them about 62 per cent instead of about 58 per cent, of the total value in the country, an addition which by itself, in my judgment (concurred in, I may add, not only by the attorney-general, but by every competent lawyer with whom I talked), worked no change in the legal status of the Steel Corporation.

Furthermore, I believed that the action was emphatically for the general good, that it offered the only chance for arresting the panic, and that it would probably arrest the panic, as it did. I answered Messrs. Frick and Gary, as set forth in my published letter, to the effect that I did not deem it my duty to interfere, that is, to forbid the action which more than anything else in actual fact saved the situation. The result justified my judgment. The panic was stopped, public confidence in the solvency of the threatened institution being at once restored.

Incidentally I may mention that when I was in Birmingham last spring, every man I met, without exception, who was competent to testify, informed me voluntarily that the results of the action taken had been of the utmost benefit to Birmingham, and therefore to Alabama, the industry having profited to any extraordinary degree, not only from the standpoint of the business, but from the standpoint of the community at large, and of the wage workers, by the change in ownership. The results of the action I took were beneficial from every standpoint, and the action itself at the time when it was taken was vitally necessary to the welfare of the people of the United States.

A Shot at Schley.

When it was called to his attention that Mr. Schley had testified that he did not know it was his firm, that of Moore & Schley, that was sought to be saved, Col. Roosevelt said with sharpness:

"If Mr. Schley does not know he wouldn't have failed if I hadn't taken the action I did, he is the only man in New York who doesn't."

Speaks for Federal Control.

The inquiry led into a discussion of governmental regulation of large corporations.

"I am sure you will not accomplish the best results by investigations of congress, such as this one," said Col. Roosevelt. "It must be done by our national government acting, as the government of Germany, in the interests of all people. I believe that government control will ultimately commend itself to the people of the United States." He said this might

cover the matter of prices as suggested by Judge Gary.

Chairman Stanley advanced his personal views, "I don't believe the dissolution of the Steel Corporation into its corporate parts is an adequate remedy. We must abolish the Steel Corporation by ousting it from ownership in every common carrier on the continent. We should bar the Steel Corporation directors from becoming directors of railroads. That is the most acute question this committee will be called upon to decide."

Schwab Proposed Steel Merger.

Charles M. Schwab, president of the Bethlehem Steel Corporation and the first president of the United States Steel Corporation gave to the committee the story of how he had won over Andrew Carnegie to the sale of his property and thereby made possible the formation of the Steel Corporation. He was on the stand all of Friday and finished his testimony Saturday afternoon.

In a narrative of most interesting details, Mr. Schwab told in his own way the story of the formation of the Steel Corporation as far as he had participated in it personally.

"In the fall of 1899," he said, "while president of the Carnegie Steel Co., I was tendered a dinner at the University club, New York by J. Edgar Simmons and Chas. S. Smith of New York and there were present 70 or 80 of New York's leading financiers and business men. I made some remarks for my company and chose for my subject the future development of manufacturing in the United States, especially as relative to the steel industry. I explained the great advantages that would result in manufacturing from the organization of such a combination as the Steel Corporation. The reasons I gave were that such a company would have eminence in the world's markets; that instead of many different companies manufacturing the same lines, it would be possible to have one mill run on one product, thereby realizing great economies in manufacture; and that distribution and selling would be very greatly economized instead of Pittsburg mills shipping to Chicago and Chicago mills shipping to Pittsburg as was then the case. I took pains to express the view that such a combination was not to attempt to establish any arrangement to limit production or to fix or maintain prices, but that its purpose would be to effect economies and make the capital invested much more profitable.

"After the dinner, I went home to Pittsburg and several days later received a message from John W. Gates to meet J. P. Morgan in Philadelphia, the following day. When I reached Philadelphia, Mr. Gates phoned that Mr. Morgan was ill and I went on to New York, seeing Mr. Morgan the next day at his house. Mr. Morgan asked me to go over with him in detail the ideas I had expressed at the dinner as to a large combination of steel companies. He said he was convinced of the advantages of such an organization and asked me if I could get a price from Mr. Carnegie. Several days later, I had a talk with Mr. Carnegie, advised him of his age and of his philanthropic desires and said he ought to sell his plant. With a good deal of reluctance, he finally yielded. My opinion is that very soon afterward he regretted he had made a price. I took the price to Mr. Morgan, but beyond being consulted as to the general values, resources, etc., of the company I had nothing further to say as to the formation."

Mr. Schwab said in all these early discussions he laid special stress upon the fact that any so-called consolidation based on the false assumption of the fixing of prices or the restriction of production was bound to fail.

At this point, Mr. Stanley wanted to know about the gentlemen's agreements that had been common in the steel trade a decade ago. These agreements, Mr. Schwab said, were never made for any definite time, were broken when a manufacturer felt like it and frequently didn't last longer than it took for "someone to get to a telephone." Some of them required small forfeits.

"What!" ejaculated the chairman, "Why the plate association had a forfeit of $100,000."

"That is a very small amount in the steel business. If someone wanted to take a large order, he wouldn't hesitate at that sum," said the witness, smiling.

No Carnegie Methods Today.

Mr. Schwab expressed the opinion to the committee that if Andrew Carnegie were in business today with his plant and position established in the trade, his policy would be much different than it was under the so-called "Carnegie methods" and he would not have made the sacrifices in prices he then made. He said that conditions had greatly changed and that "co-operation to a very great measure must take the place of competition." He was advocating and had advocated at the recent Brussels conference that steel makers interchange information as to costs of manufacture for the same reason that subsidiary companies of any corporation compare costs. He believed they could do this without injuring one another.

"Today in the steel industry there is only one item in which there is not a free interchange of information and that is the conversion cost," said the witness. "That is what I want included."

No More Great Companies.

Mr. Schwab gave it as his belief that there would be no new great steel plants built in this country in the future because of the closely held condition of the raw material resources, especially ore and coal, by the present companies. He thought development would come by extensions of present plants. He said the Bethlehem Steel Corporation had an estimated ore reserve in Cuba of 500,000,000 tons sufficient to fill its requirements for 250 years. He said there is more ore known in Cuba today than is at present developed on the Mesabi ranges.

Chairman Stanley produced pleadings in the suit of H. C. Frick against Andrew Carnegie over affairs in the old Carnegie Steel Co. He asked about the great discrepancy as to the assets of the company, stated by Mr. Schwab as $75,000,000 in his answer filed in court at that time when 18 months later the property was sold to the Steel Corporation at approximately $500,000,000. Mr. Schwab explained that his figure given then represented the actual money that had been invested in the business, over a period of years. Under the "iron clad agreement" among the partners in the event of the death or retirement of any member, his stock was to be sold to the others at the book value. For that reason, the book value was kept as low as possible. It was therefore thought fair, he said, that in the event of any division with Mr. Frick he should retire on these conditions. Later when the suit was compromised, it was necessary, Mr. Schwab said, for him to put an actual valuation on the property and he did so at $320,000,000.

An interesting bit of evidence developed was that efforts were made to purchase the Carnegie Steel Co. by certain parties even before Andrew Carnegie gave an option to H. C. Frick and Judge Moore, which failed to go through, prior to its acquisition by the Steel Corporation. Mr. Schwab declined to discuss this matter beyond making the general statement to this

effect, and that he had written some letters, as president, pertaining to this deal.

In its ramifications the examination touched on a variety of subjects. Mr. Schwab said it was absolutely false that prices or distribution of business among the steel makers of the world were considered at Brussels. He said these questions had not been mentioned at all.

Rail Tariff Discussed.

The question of the cost of steel rails and its relation to the taariff, was raised. Mr. Schwab said the rail makers of the country could produce rails as cheaply as they could abroad offsetting the lower labor cost there by more economical plant operation, because of larger output. This was puzzling to Mr. Sterling, Republican, of Illinois, an avowed protectionist, who stated that the theory of the Republican party was that the tariff should measure the difference in the manufacturing costs of domestic and foreign makers. He did not see under such a statement why such a high tariff was needed. Mr. Schwab said that American rail makers needed the tariff because German mills are now underselling the mills of this country on the Pacific coast and that if the duty were lowered, it would extend the market of foreign makers and enable them to build greater output mills, thereby realizing the economies by which American makers are now able to meet their lower labor costs. He estimated the cost of rails in this country today at about $21.50 at the mill. The tariff was needed he said, also, because other countries making rails except England, have tariffs and these are higher than those of this country.

As to selling rails in foreign markets, at times, at lower prices than in the domestic market, Mr. Schwab said he considered it good business to sell the surplus to keep the mills running fuller and to obtain the lower cost per ton for all rails produced under such conditions.

Corporation Minutes Produced.

Chairman Stanley brought out the minutes of meetings of the executive committee of the Steel Corporation in 1901, and quizzed Mr. Schwab as to several references to the fixing of freight rates on the Corporation railroads. These books have been produced in evidence by the committee's order. Mr. Schwab said there was no legal restraint; then why could not the rates be placed where it was pleased to do so. Mr. Stanley tried to connect this fact and the statements in the minutes with what he termed the excessive rate prevailing on the Corporation's ore roads in the Lake Superior region, and indirectly with the advanced valuation of iron ore. The witness said, however the advance in ore costs had been due to the great increase in steel making in the country in the past 20 years. He predicted that the output of 25,000,000 tons of steel last year would expand to 40,000,000 tons in ten years.

Speaking of the influence of J. P. Morgan in the affairs of the Steel Corporation, Mr. Schwab said that when he took to the former matters of that organization, which affected his other interests, his reply unvariably was that the Steel Corporation was to be conducted for its best interest regardless of any outside consideration. "Mr. Morgan was the most fair-minded and biggest man among the many men with whom I have ever had anything to do," said Mr. Schwab.

Following Mr. Schwab's examina- the committee adjourned Saturday afternoon to resume its sessions in Washington on Tuesday.

Calls Ore Rates Excessive.

John A. Topping, chairman of the Republic Iron & Steel Co., told the committee at its session Aug. 3 that if the Pittsburg and Youngstown territories were to hold their supremacy as steel centers, it will be necessary to reduce the freight rates on iron ore from the Superior ranges to that territory. If this reduction were not forthcoming, Mr. Topping predicted that the Pittsburg district would be superseded by the development in the Chicago district and in the south—"shrivel up," as he put it, to express his judgment of the effect that would be eventually produced by a continuance of present conditions.

Mr. Topping told the committee that in his judgment, railroad freight rates from the Lake Superior mines to the upper lake ports and from the lower lake ports to Pittsburg and Youngstown, were excessive. This applied to the charges of the Steel Corporation and Hill roads in the mining sections and to those of the lines hauling the ore from Cleveland, Conneaut, Ashtabula and other lower lake ports to Pittsburg and Youngstown.

Chairman Stanley, of the committee, asked the witness if it were not a fact that the Republic Iron & Steel Co. was paying tribute to the United States Steel Corporation of from $800,000 to $1,000,000 a year through excessive freight charges in the hauling of ore. Mr. Topping declined to commit himself as to any definite figures, saying he was not qualified to give any specific statements in this regard, except the general utterance that to the extent he considered the freight rates excessive, his company was paying a tribute to the Steel Corporation. He said he based his judgment that the rate should be reduced to those rates obtaining in similar traffic in other districts, especially the south.

The committee, through Mr. Stanley, was curious to know why the Republic Iron & Steel Co. or any of the other independent companies in similar positions had not complained of the freight rate conditions. Mr. Topping replied that this was due perhaps to the fact that the companies had never had pressure to do so as long as the rates were kept on an "even keel" to all concerned, and it might not be a neighborly act.

"Is this another application of the Golden Rule in business?" asked Mr. Stanley.

"Do you mean that there is no objection being made by the independent steel companies as long as steel prices are kept on an 'even keel?'" continued Mr. Stanley.

Present Steel Prices Weak.

"The question of prices has nothing to do with it. I mean that as long as our competitors are charged the same freight rates, we are all upon the same basis in that respect. Steel prices are not firm at the present time, and we are having trouble right now to meet competition in this respect, especially in the Chicago district."

Mr. Topping said the matter was also one of policy, since the railroads were the largest customers of the steel companies, and naturally the latter did not like to make any general or broad attack unless the conditions would absolutely force them to do so.

Congressman Beall pressed Mr. Topping for information concerning the so-called Gary dinners of steel makers. Asked as to what was their purpose, Mr. Topping said they were the result "of a general desire upon the part of manufacturers to keep together and to interchange opinion upon any subject to their mutual advantage, such as those of a technical, sociological and financial nature."

"Did they touch upon the sordid

question of prices?" inquired Mr. Beall.

"Not specifically, but naturally, in a general sense," replied the witness.

Influence of Gary Dinners.

Mr. Beall wanted to know if the manufacturers present at these dinners were not bound to maintain prices upon their honor, which would be more effective, as he put it, than by written agreement.

"Decidedly not," said Mr. Topping. "The Gary dinners did not have any bearing upon prices, except in a general sense." Mr. Topping went on to explain that his company conducted its business according to its own judgment. He said it had maintained its prices up to the time of the cut it made in May, because it had sold a large tonnage the previous year and did not consider it advisable to make any reductions until at the end of the manufacturing season, so as to avoid any depreciation or shrinkage in the value of the stocks of its patrons.

Mr. Topping told the committee that with a well equipped plant in the south with the conditions obtaining in 1907, when the Tennessee Coal, Iron & Railroad Co. property was purchased by the Steel Corporation, pig iron costs were about $9 to $10.50 a ton. He said a fair estimate of the cost of steel rails at present, taking into account that the rail mills must be rebuilt every 20 years, would be about $22, at the works.

Asked as to his connection with the sale of the Tennessee Coal, Iron & Railroad Co., of which he was chairman at the time, to the Steel Corporation, Mr. Topping stated that the only part he had played was to give to Attorney Lewis Cass Ledyard at the instance of Mr. Schley, his opinion of the extent of the resources, the prospects of the business and the earning capacity of the company. Mr. Ledyard was then carrying on negotiations for the exchange of the Pennsylvania stock for Steel Corporation bonds.

Chairman Stanley wanted to know what Mr. Topping knew of the Brussels conference, and the witness replied nothing at all, as he had not attended, although he had been invited.

Schley Tells of Sale.

In some particulars the testimony given before the committee Wednesday, Aug. 2, by Grant B. Schley, of Moore & Schley, New York, differed from that previously related by several witnesses regarding the circumstances of the sale of the Tennessee Coal, Iron & Railroad stock, which, it had been stated, was done to aid this firm then in distress. Mr. Schley said there had been no specific objection made by the banks to Tennessee stock as collateral put up by the firm any more than to any other industrial stocks of similar character at that time. He said it was no more necessary to exchange the Tennessee Coal, Iron & Railroad stock for more marketable securities than that of the Republic Iron & Steel Co., or any of the other then not readily salable stock held, except that the firm had on hand a very large amount of the former stock. Mr. Schley stated that his firm held from 140,000 to 150,000 shares of the Tennessee stock, of which they had used 100,000 or 105,000 shares as collateral for their own loans from the banks. The banks would only accept the Tennessee stock or any similar industrial for a relatively small percentage of the collateral put up. In this way, he said, out of loans of $35,000,000 the proportion of Tennessee stock in the collateral represented about $5,000,000 or $6,000,000 of the total.

Mr. Schley declared that he had never said in actual word or in substance that the exchange of United States Steel Corporation bonds for Tennessee stock was necessary to save Moore & Schley from failure. He admitted, however, that the company was in a serious condition. Because of the large amount of the Tennessee stock held, he appreciated that its exchange for a more liquid security was the best thing to be done under the circumstances, and that the Steel Corporation was the only possible purchaser. In reply to the committee's queries, he said that the Steel Corporation could not have loaned the bonds and accomplished the same effect as the sale because his friends who had large blocks of this stock up with his firm could not have availed themselves of the borrowed bonds and could not have sold them.

Knew of No Attack.

Mr. Schley said that he never knew of any general attack or drive to depress Tennessee stock, that the objection to it by the banks was due to its marketable position, being a pooled stock, and that no particular banks which were dominated by Morgan influence were making a point to discredit the Tennessee securities. Touching upon the Washington visit of Judge Gary and Mr. Frick, the witness said that no representation had ever been made to him; that the main object of the purchase was to save his firm and prevent a possible serious extension of the panic. He said his interviews with Judge Gary and Mr. Frick had pertained wholly to the price questions. According to President Roosevelt's letter to Attorney General Bonaparte, which has been submitted in evidence, the statement of Judge Gary and Mr. Frick to the former was that an important business firm in New York would undoubtedly fail next week if help were not given and that application had been made to the Steel Corporation to purchase the large amount of Tennessee Coal, Iron & Railroad securities held by this firm, as the only means of avoiding a failure.

C. P. Perin and other engineers, who had made an examination of the Tennessee Coal & Iron Co. ore and coal properties prior to their acquisition by the syndicate, pronounced them to be of enormous value and to embrace by far the best holdings of this character in the south.

Spanish Ore Trade

In rubio ore there is not much business doing, sellers' quotations being 19s 6d per ton for delivery over a few months, although some odd lots for early delivery could be secured at 19s. Freights are firmer, 4s 6d having been paid at Bilboa, Middlesborough, with 4s 7½d now asked.—Ironmonger, London.

Foreign Rail Trade

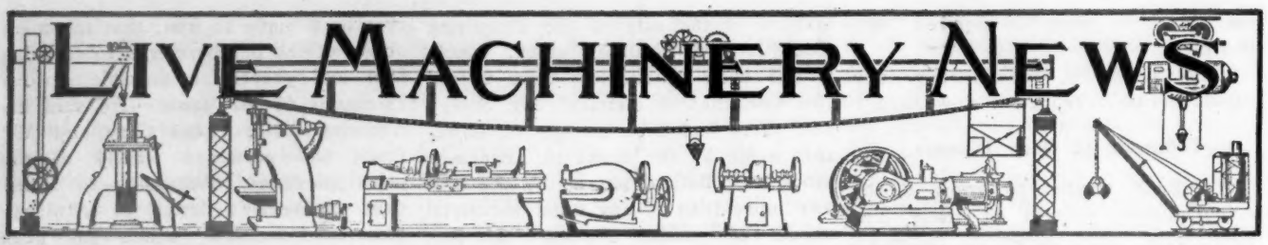
The rail business is still in a state of almost complete stagnation, many mills being short of work, while but few inquiries have come before makers during the last few weeks.—Ironmonger, London.

St. Louis Shipments

Receipts and shipments of pig lead and spelter at St. Louis for the last two weeks were as follows:

	Zinc and spelter.	Pigs of lead.
Receipts:—		
For the week ending July 29..	69,660	53,770
For the week ending Aug. 5..	82,630	49,390
Shipments:—		
For the week ending July 29..	84,910	26,450
For the week ending Aug. 5..	96,860	38,220

The McKinley Traction Cultivator Co. has leased a two-story brick building on the Iron Mountain Railroad, Second and St. George streets, St. Louis, and will begin the manufacture of motor plows within a very short time. The property is 100 x 148 feet.



Machine Tools

William Chaffin, Huntington, W. Va., is in the market for machine tools, including drop forging machinery, stamping and milling machines, etc.

The Rummel Machine Screw Co., which will manufacture screw machine products, is erecting a new factory, 35x120 feet, on West Seventy-seventh street, Cleveland. In addition to the screw machine products department, the company will purchase equipment for case hardening and grinding. The following new machinery is needed at once: One 35-horsepower gas engine; four automatic screw machines; one lathe; one shaper; one grinder and one four-inch tapping machine.

Railroads

Bids are being received by the Wheeling Traction Co., Wheeling, W. Va., for a two-story reinforced concrete repair shop.

The Baltimore & Ohio railroad is preparing to erect a machine shop at Grafton, W. Va. F. L. Stuart, Baltimore, is chief engineer.

The city of Jonesboro, Tenn., will vote on a bond issue of $25,000, Sept. 2. The issue, if approved, will be used toward the construction of an interurban traction line between Jonesboro and neighboring cities, including Johnson city. A. L. Shipley and others are interested.

The Louisville Railway Co., Louisville, Ky., is planning the erection of a plant for manufacturing street cars. The shops will also be used for repair purposes. A site has been purchased, but the exact date for the erection of the plant has not yet been decided on. T. J. Minary is president of the company.

Foundries

J. E. Leonard, Springfield, Mo., is planning the construction of a large stove foundry in that city.

The Union Foundry Co., Fitchburg, Mass., will shortly begin the erection of an extensive addition to its foundry.

The Hillen Mfg. Co., Louisville, Ky., is in the market for equipment for a brass foundry. Some of the necessary machinery has already been purchased.

The Elyria Brass & Iron Co., recently incorporated, advises that it is erecting at Elyria, O., a plant for manufacturing iron, steel and brass castings. J. V. Kennedy, Elyria, is one of those interested.

The G. E. Hoglund Foundry Co., Gardner, Mass., is erecting a new plant, 30 x 160 feet, which will be well-equipped throughout. A Whiting cupola will be installed. The plant will be placed in operation about Nov. 1.

The Millers Falls Co., Millers Falls, Mass., has recently completed an extension to its foundry which will contain new pickling, tumbling, annealing, pattern and casting inspection departments. Additions are also being made to the wood-working shop. The capacity of the power plant was also recently increased.

The Perfection Spring Co., 2414 Superior viaduct, Cleveland, has increased its capital from $200,000 to $500,000 in order to provide for the taking over of the Standard Brass Foundry Co., Cleveland, and for remodeling and installing new machinery in its present plant for manufacturing automobile springs. The company expects to enlarge the brass foundry and utilize it immediately for making a new automobile motor, and to that end will make a number of changes in the equipment. The Perfection company, of which P. A. Connelly is secretary, has just purchased a quantity of spring manufacturing machinery from the Bruce-Macbeth Engine Co., Cleveland.

Power Plant Equipment

H. F. Williamson, mayor of Blue Mountain City, Ala., is planning the erection of an electric light plant in that city.

Electrical equipment is required by the New Bluegrass Canning Co., Owensboro, Ky., which is purchasing equipment for a canning factory.

A company may be organized at Falmouth, Ky., for the erection of an electric light plant. Among those interested is Capt. J. W. Throckmorton.

The El Dorado Light & Water Co., El Dorado, Ark., has secured a franchise from the municipality and plans to erect a power-house and reconstruct the local water system.

Power equipment will be required by the Gallatin Laundry Co., which has been incorporated with $5,000 capital stock at Gallatin, Tenn. D. D. Canfield and others are interested.

An electric power plant will probably be erected by the Rockwood, Tenn., Mills, cotton manufacturers. The plant will take the place of a steam power plant which is now in use.

The Nashville Railway & Light Co., Nashville, Tenn., is planning the erection of an addition to its power-house. The company has secured a site, but may not erect the addition immediately.

The Crystal Laundry Co., Louisville, Ky., is spending $25,000 in making improvements. New boilers and engines will be needed among other equipment. A large addition to the plant is being built.

The Nashville Armature Works, Nashville, Tenn., is in the market for motors, ranging in capacity from 10 horsepower to 25 horsepower. Both direct and alternating current motors are to be used.

The Gainesville Railway & Power Co., Gainesville, Ga., will erect a power house and will furnish electric light and power to the community. It is completing a hydro-electric plant on the Chestatee river.

Plans have been prepared by the Republic Rubber Co., Youngstown, O., for additions to its present factory and the enlargement of its power plant, which will practically double the present capacity of its plant.

The Home Milling Co., Greenville, Ky., is in the market for electrical equipment, having decided on electric drive for the operation of its mill which is now in process of construction. George J. Johnston is general manager of the company.

A contract has been awarded to Rose & Fischer, Pittsburg, for the Lawrenceville Young Men's Christian

Association building, Pittsburg. The building will be four stories high and will require slightly over 100 tons of steel. Bids are being taken on a 100-horsepower boiler to be installed in the heating plant and a pump, to be operated by a 10 - horsepower motor, to be installed for the swimming pool.

New Works

McNeese & Son, New Decatur, Ala., will erect a machine ship in that city.

The Ball Engine Co., Erie, Pa., is erecting a brick and steel storage house to cost $12,000.

Fred S. Gray, Jacksonville, Fla., is contemplating the establishment of a can factory in that city.

The Southern Mfg. Co., Richmond, Va., will erect a can factory at South Richmond. E. C. Laird is president.

The Ohio Iron & Brass Bed Co., McAlester, Okla., has let a contract for the construction of a factory in that city.

An addition is being built to the plant of the Odin Stove Mfg. Co., Erie, Pa. Contracts have been awarded for most of the equipment.

Norman A. Hill, 405 Courtland street, Baltimore, is planning to erect a machine shop. It will be one and two stories, 40 x 100 feet, and 28 x 28 feet.

The Standard Aluminum Co., Two Rivers, Wis., which has increased its capital stock, proposes to begin work at once on a new three-story building, 44 x 200 feet.

A contract has been awarded to the Brookville Bridge Co., Brookville, Pa., for a one-story steel forge shop to be erected on Edmund street, Dayton, O., for the Dayton Pipe Coupling Co., to cost $10,000.

The Oliver Chilled Plow Co., South Bend, Ind., has awarded a contract for the construction of a six-story building on Broadway in St. Louis. It is reported that the building will be used for manufacturing plows.

A contract has been awarded to Walker & Curley, Pittsburg, by Dickson & Son, for a two-story steel frame building, 35 x 50 feet, to be erected on Liberty avenue, Pittsburg, for the manufacture of blacksmith supplies.

The Gibbs Implement & Vehicle Co., Shreveport, La., recently incorporated with $50,000 capital stock, is planning the erection of a plant for the manufacture of agricultural implements. H. W. Gibbs is president and general manager.

The Page Engineering Co., 113 East York street, Baltimore, will erect a machine shop and warehouse 40 x 100 feet, two stories, with a wing, 28 x 32, one story. The company will do general machine work and will make gas engines and appliances.

Structural work has been completed on the extension to the Koppel, Pa., plant of the Orenstein-Arthur Koppel Co. and a large portion of the equipment has been purchased. It is planned to have the new machine and erecting shops ready for service early next month.

The Westinghouse Electric & Mfg. Co., Pittsburg, has awarded a contract to Golden & Crick, Pittsburg, for a manufacturing building to be erected in Braddock avenue, East Pittsburg, to cost $200,000. The building will be four stories high, 80 x 200 feet, with a one-story annex, 60 x 200 feet.

Miscellaneous

George T. Hood & Co., Harriman, Tenn., have been asking for prices on a hoisting outfit of medium capacity.

The Electric Vehicle Co., of Louisville, has completed its plant and is now manufacturing electrical commercial trucks.

The city of Ashland, Ky., is contemplating the issuance of bonds for the purpose of building a pumping station. The mayor can give details.

The Pennsylvania Machinery & Equipment Co., Pittsburg, has sold three Columbus gas engines to be used in the West Virginia gas fields.

The Longest Bros. Co., Louisville, which has a small machine shop for the manufacture of motor trucks and the repair of autos, has purchased a drill press from E. D. Morton & Co.

Urban C. Brewer represents New York capitalists who have been purchasing land near Louisville, Ky., for the purpose of erecting a cement mill. Nine hundred acres have already been secured.

The Nordberg Mfg. Co., Milwaukee, has taken a contract from the Fox River Paper Mills Co., Appleton, Wis., for an 800-horsepower, tandem, compound poppet valve Selzer type Swiss engine.

The Reliance Iron & Engine Co., Racine, Wis., has commenced moving its plant to LaCrosse, Wis., where it will be known as the Sta-Rite Engine Co. The LaCrosse plant will be in operation by Aug. 15.

The American Automobile Mfg. Co., of New Albany, Ind., across the river from Louisville, has closed contracts for a number of machine tools, and is now turning out five autos a week. The company will make commercial cars later.

The water department of Mobile, Ala., is planning considerable enlargements of the pumping facilities. New machinery will be required, and bids are to be advertised for in the next few weeks. James Soose is superintendent of the department.

Carl Lipman, president of the Lipman Mfg. Co., Beloit, Wis., announces that a six-cylinder motor car has just been completed at that plant, which will be used as a model for a line of cars to be manufactured by the company in the near future.

The Union Steel Castings Co., Pittsburg, which is increasing the capacity of its plant, has placed an order with Laidlaw-Dunn-Gordon Co. for an air compressor to be driven by a direct connected 185-horsepower motor operated by an automatic starter.

Contracts have been awarded by the borough of Etna, Pa., for the municipal light plant as follows: building 34 x 94 feet, steel and brick construction, Walker & Curley, Pittsburg; two 200-horsepower 4 valve engines and one 80-horsepower single valve engine to the Ridgway Dynamo & Engine Co.; generators, switchboard and lamps to the Westinghouse Electric & Mfg. Co., and piping to the National Valve & Mfg. Co.

The Bruce-Macbeth Engine Co., Cleveland, reports the following recent sales of vertical natural gas engines: One 55-horsepower, two-cylinder, to the Pittsburg Steamship Co., Conneaut, O.; one 55 - horsepower, two-cylinder, to the Canton Lumber Co., Canton, O.; one 150-horsepower, four-cylinder, to the H. C. Fry Gas Co.; one 150-horsepower, four-cylinder, to the Van Dorn Iron Works Co., Cleveland; one 115-horsepower, four-cylinder and one 35-horsepower, two cylinder to the Harshaw, Fuller & Goodwin Co., Elyria, O.; one 115-horsepower, four-cylinder, to the Prairie State Incubator Co., Homer City, Pa.; one 90-horsepower, four-cylinder, to the K-W Ignition Co., Cleveland; one 80-horsepower, two-cylinder, to the Perfection Spring Co., Cleveland; one 75-horsepower, four-cylinder, to the Consumers Ice & Cold Storage Co., Lexington, Ky.; one 300-horsepower, four-cylinder, to the municipal lighting plant, Canal Dover, O., the installation being a duplicate of one made two years ago; one 350-horsepower, four-cylinder, to the Monongah Brass Co., Fairmount, W. Va., this engine being the sixth ordered by that company.

Government News

Bids will be opened at the navy pay office, Washington, D. C., at 12 m. on Aug. 9, for furnishing and delivering at the navy yard, Norfolk, Va., eight sets steam turbine-driven blowers. The turbine to run at about 1,400 revolutions per minute with 225 pounds steam pressure and deliver 25,000 cubic feet of free air per minute against a pressure of 5 inches of water.

Bids will be called for at a later date by the purchasing office, Isthmian canal commission, Washington, D. C., for furnishing and delivering at the isthmus 2,000 pounds of 90-pound steel rails, 8,000 pairs splice bars, 1,000 extra special track bolts, 160,000 tie plates, 400,000 screw spikes, 8,000 special joint tie plates, and 17,000 special joint screw spikes.

Bids will be opened at the bureau of supplies and accounts, navy department, Washington, D. C., for furnishing at various navy yards supplies:

Aug. 28.

Steel, plate, medium, 192,500 pounds, Norfolk, 3823.

Aug. 29.

Machines, turret, automatic, 2, Washington, 3820.
Machine, screw, automatic, 1, Washington, 3820.
Safes, No. 1 and 4, 20, Brooklyn, 3831.

Sept. 12.

Brass, sheet, 2,100 pounds, Mare Island, 3829.
Cars, dump, 6, San Diego, 3826.
Rail, steel, miscellaneous, San Diego, 3826.
Tubing brass, voice, 600 feet, Puget Sound, 3828.
Blades, hacksaw, 60 gross, Mare Island, 3828.
Buckets, iron or steel, galvanized, 2,000, Mare Island, 3828.
Drills, twist, miscellaneous, Mare Island, 3828.
Hammers, miscellaneous, Mare Island, 3828.
Jacks, hydraulic, 7-ton, 8, Mare Island, 3828.
Nuts, steel semi-finish, 17,700 pounds, Mare Island, 3829.
Reamers, 10 sets, Mare Island, 3828.
Screws, wood, 225 gross, Mare Island, 3828.
Taps and dies, miscellaneous, Mare Island, 3828.
Wrenches and spare parts, pipe, miscellaneous, Mare Island, 3828.
Pipe, brass, 18,000 pounds, Mare Island, 3829.
Pipe, wrought iron or steel, 7,000 feet, Puget Sound, 3826.
Tubing, copper, 750 pounds, Puget Sound, 3829.
Valves, composition, miscellaneous, Mare Island, 3829.

Bids will be opened at 10:30 a. m. on Aug. 28, at the Isthmian canal commission, Washington, D. C., under canal circular 642, for furnishing materials as follows:

240 plates structural steel girders.
10 lips, 4-yard dipper, manganese steel.
12 rear driving locomotive springs.
6 front driving locomotive springs.
36 sets engine truck locomotive springs.
12 tender truck locomotive springs.
150 nests truck car springs.
50 sets drawbar car springs.

For plans and specifications address the purchasing officer of the commission at Washington.

Canal Circular:—Bids were opened at the Isthmian canal commission, Washington, D. C., under canal circular 640, for furnishing and delivering at the isthmus supplies, as follows:

One turbo generator, 2,200 volt; General Electric Co., Schenectady, N. Y., $26,623, time 190 days, alternate bid $29,143, time 160 days, delivery Colon.

One 15-ton macadam road roller: The Buffalo Steam Roller Co., Buffalo, N. Y., $3,140, time 30 days, delivery Colon; Kelly Springfield Road Roller Co., Philadelphia $2,625; with hand steering gear instead of steam $2,550; under own specification "B", $1,995, under own specification "G", $3,025; with hand steering gear instead of steam, $1,995; time 30 days, delivery Colon; Vermilye & Power, N. Y., $3,049; time 20 days, delivery Colon; Manning, Maxwell & Moore, N. Y., $2,838; time 45 days, delivery Colon; W. V. Moore, West Falls Church, Va., $2,500; time 60 days, delivery Colon.

THOMPSON AUTOMATIC CUT-OUT HANGER, SHOWING LATCHES DISENGAGED

Awards of contract were made Aug. 5, by the Navy department, to the Midvale Steel Co., of Philadelphia, for furnishing the following items of plate, on its bid, July 25:

7 tons upper casemate armor plate of U. S. S. Rhode Island.
5.5 tons upper casemate for U. S. S. Georgia.
0.077 tons nickel steel plate for U. S. S. Georgia.
9.5 tons turret armor plate for U. S. S. Tallahassee.

The contract price is $9,849.11, which was exactly 1 cent less than the bid of the nearest competitor.

Arc Light Hanger

A new type of arc light hanger, shown in the accompanying illustration, has recently been designed and put on the market by the Thompson Hanger Works, 337 Superior avenue N. W., Cleveland. In its construction is embodied an automatic cut-out device which makes its operation extremely simple. It may be used with an unusual degree of safety and has been approved by the safety appliance board of the United States Steel Corporation.

The Thompson hanger consists essentially of an upper and a lower member, each of which is provided with a pulley wheel, 4 inches in diameter, through which a lamp cord passes. These members may be disconnected by means of a short, light pull on the cord, and the lamp, accompanied by the lower member, may be lowered to a point where it is accessible to the trimmer. On again raising the lamp, the two members of the hanger automatically reengage on contact, and are held securely in this position by the weight of the lamp. As the electric current flows directly through the hanger the disengaging of the two members automatically shuts off the flow; hence the operator may trim the lamp without the use of the usual insulating stool.

Since no further electrical conductor is necessary to connect the two parts of the hanger, the use of dangerous as well as expensive festoons of conductor wire is rendered unnecessary. Hence these members are dependent only on the lamp cord for connecting and disconnecting. This cord may be exceptionally light, as the strain on it is greatly lessened by the use of two pulleys instead of one. The use of the two pulleys presents another advantage: The two portions of the cord between the pulley wheels must be parallel and in the same vertical plane before the two members of the hanger can interlock and hence there can be no reversal in polarity.

By means of a universal joint, which connects the lower member of the hanger with the lamp, the latter may swing freely in any direction. The lamp may be hung at any distance below the hanger by inserting a wire or chain of the required length.

The hanger may be used in foundries, steel works, industrial plants, on railroads, for street lighting purposes, etc. It is fitted with a top bail which is suitable for attachment to a pipe bracket, truss, cable, ceiling or any other horizontal support.

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers

The following manufacturing companies have filed articles of incorporation:

Atlantic Machinery Co., Phoenix, Ariz.; $250,000; by Vernon C. Clark and W. H. Peasley.

The Rotary Hoisting Engine Co., Owensboro, Ky.; $100,000; by Roy Gilbert, Guy G. Gilbert and James W. Gilbert.

The Wire Specialty & Machine Works, South Bend, Ind.; $40,000; by Gerald Mahony, Marion Campbell and Thorvald Hansen.

Southern Steel Products Co., Dallas, Tex.; steel products; $1,000 capital; by C. H. Marquess, Owen Hughes and W. E. Weathered.

The Beggs Pipe & Foundry Co., Birmingham, Ala.; $50,000; to manufacture cast iron pipe; by H. T. Beggs, president and general manager.

Schmitt Mfg. Co., North Bergen, N. J.; to manufacture gas stoves and ovens; $100,000; by Richard J. Lynch, Christopher Schmitt and John Schmitt.

The Atlantic Perfected Motor Co., Atlantic City, N. J.; to manufacture motors, engines, etc.; by Frank Brown; Thomas Kilcourse and Samuel S. Phoebus.

Eastern Range Boiler & Welding Co., Conshohocken, Pa.; $100,000; by J. Edward Wentling and Herbert Hallet, Conshohocken, Pa.; and Edwin W. Harrison, Lower Merion, Pa.

The German Liquid Pump Co., Trenton, N. J.; to manufacture and repair pumps for pumping liquids, etc.; by Charles A. Gehman, James A. Alcorn and Harrison L. Wallace.

The American Metal Bed Co., Newark, N. J.; $100,000; to manufacture metal beds, springs, mattresses, couches, etc.; by Frederick H. Eisele, Peter B. Fox and John L. Eisele.

The Chicago Carburetor Co., Jersey City, N. J.; to manufacture carburetors; $135,000; by Thomas D. Huff, Chicago, Ill.; Howard K. Wood, New York City, and George W. Flacke, Jersey City, N. J.

The Indiana Steel & Iron Co., Linton, Ind.; $150,000; to manufacture iron goods; by M. K. Frank, J. D. Karasik, Algernon Granville, and S. R. Sobel, all of Pittsburg, Pa., and W. J. Hamilton, Linton.

The Hexter Motor Truck Co., Manhattan, New York City; to manufacture motor trucks, cars, etc.; $10,000; by Arthur A. Alexander, A. T. Rook and Maurice Millmet, all of 51 Chambers street, New York City.

Slatington Rolling Mills, Slatington, Pa., successor to the Slating Rolling Mill Co.; $60,000; by Walter H. Andrews, Thomas Zellner, Fred Horlacher, Samuel Rosebery, John P. Gordon, Edwin German, Stephen D. Behler, Edwin Osler, all of Slatington, Pa.

The Auto Electric Co., Chattanooga, Tenn.; electric machinery; $25,000; by W. B. Royster, B. Walzl, A. C. Carroll, Frederick Giddings and A. C. McClellan. The company has secured the building at 722 Chestnut street, and is installing machinery.

The Eureka Safety Crank Co., Manhattan, New York City; to manufacture safety cranks for motors and engines; $50,000; by Lyman Bartlett, Englewood, N. J.; George W. Peck, 1123 Broadway, New York City; Samuel L. Bevan, Orangeburg, N. Y.

The Loupin Iron Works, Brooklyn, N. Y.; $10,000; to construct all kinds of iron work for buildings; by Isaac Rosen, 605 Broadway, New York City; Isidor Solomon, 486 Halsey street, Brooklyn, N. Y., and Abraham Stein, 140 Nassau street, New York City.

The Geyser Electric Co., of New York, with works in Hartford, Conn.; to manufacture electric machinery and apparatus; $1,500,000; by Heath Sutherland, Frederick E. Anderson, Mabel N. Bacharach, Hartford, Conn.; Andrew R. Nichols, Seattle, Wash.; Geo. S. Landers, Boston, Mass.

The Barrett Motor Car Co., Buffalo, N. Y.; to manufacture motor boats, motor cycles, vehicles, etc.; $10,000; by Frank Barrett, 1450 Delaware avenue, Edward J. Meyer, 1312 Main street, Alexander G. Hoefler, 294 Connecticut street, Alfred A. Berrick, 1151 Main street, and John F. Berrick, 1115 Main street, all of Buffalo.

New Construction

The Toledo Metal Furniture Co., Toledo, O., is eercting an addition to its factory 60 x 155 feet and costing $4,000.

The Elyria Brass & Iron Co. advises that it is erecting a plant at Elyria, O., in which steel, iron and brass castings will be manufactured. J. V. Kennedy, Elyria, is one of those interested.

The Independent Tire Co., of Brantford, Ont., has awarded a contract to Secord & Sons, of that city, for the erection of a factory of reinforced concrete to cost $47,000, work to begin Aug. 1.

The Beloit Iron Works, Beloit, Wis., is building an addition to its office building, doubling the floor space. Cunningham Bros., of Beloit, have the general contract for the construction work.

The Continental Motor Mfg. Co., of Muskegon, Mich., has broken ground for a new plant, which, when completed, will cover about six acres. It will be equipped for the manufacture of gasoline motors, and will be ready for occupancy about Feb. 1.

Langdon & Hohly, architects, Toledo, O., have bids out for the erection of a new building for the Defiance Tick Mitten Co., of this city. The building will be two stories, 60 x 175 feet, and will be completed by Oct. 1. Between 75 and 80 tons of steel will be required.

The plant of the Giant Grip Horseshoe Co., Little Falls, Minn., recently purchased by J. C. Everhart, president of The Challoner Co., Oshkosh, Wis., has been moved to Oshkosh, and is now being operated in connection with the shops of the Everhart-Delaney Co.

The contract for the iron and steel work on the new $50,000 shop building for the Chain Belt Co., Milwaukee, was awarded to the Worden-Allen Co., of that city. The award was made by Leenhouts & Guthrie, architects, who have charge of the construction of the building.

The Standard Aluminum Co., Two Rivers, Wis., has increased its capital stock from $15,000 to $50,000, and will proceed at once with the erection of a new and modern factory on the site

of the former chair factory. The plans call for a three-story building of brick and steel construction, 44 x 200 feet.

The LaCrosse Stamping & Tool Works, LaCrosse, Wis., is completing a new office addition, and has occupied another addition erected in the spring and now being used as a stock room. The ground floor of the new three-story structure will be used exclusively for office purposes, and the second floor and basement will be used as stock rooms.

The Cadillac Motor Car Co., Detroit, a subsidiary of the General Motors Co., has secured the necessary land and will make several additions to its plant. These will include an addition to the iron foundry, a new brass foundry and a new three-story manufacturing building. Two stories will also probably be added to the body building factory.

The Southern Mfg. Co., South Richmond, Va., which manufactures cans of all descriptions, will construct a new factory on a site adjoining the old one, which will have double the capacity of the present plant. The erection of the new buildings will be begun at once. The officers of the company are: President, E. C. Laird; vice president, E. A. Saunders; secretary and treasurer, A. E. Roeber; general manager, W. L. Wright.

The Mather Spring Co., Toledo, O., which was recently incorporated, is planning to erect and equip works of the most modern type for the manufacture of automobile springs, with a capacity of 3,000 tons. The main building will be 70 x 400 feet, of brick with steel sash and tile roof. Machinery equipment is being made especially heavy for properly working the alloy steels necessary for automobile construction. A physical and chemical laboratory will be installed.

General Industrial

The Safety Cylinder Co., Mansfield, O., has changed its name to the Triumph Valve Co.

The Park Drop Forge Co., of Cleveland, has increased its capital stock form $150,000 to $240,000.

The Bethlehem Foundry & Machine Co., South Bethlehem, Pa., has increased its capital stock from $50,000 to $185,000.

The New Process Steel Co., Inc., Lancaster, Pa., whose incorporation was recently noted, is operating the New Process Steel Wire Mfg. Co.

The Waukesha Motor Co., of Waukesha, Wis., has increased its capital stock from $100,000 to $200,000. The increase is to provide for increasing business.

The Phillips Mfg. Co., Orlando, Fla., has increased its capital stock to $50,000. The company, which manufactures machinery, will make improvements to its plant.

James Haig and Anthony Beaulieu, of West Allis, Wis., have established a machine shop in that city. Both were formerly connected with the machine shops of Allis-Chalmers Co.

The Gray Iron Foundry Co., Reading, Pa., has purchased the entire line of patterns from the National Brass & Iron Works of that city, consisting of mirror frames, tables, portables and other patterns for ornamental work.

The Schwartz Iron & Machinery Co., Ltd., New Orleans, which was recently incorporated, advises that its business will be confined to the buying and selling of scrap iron and other metals, as well as new and second hand machinery of all descriptions.

The Bay View Foundry Co., Sandusky, O., which recently increased its capital stock from $40,000 to $75,000, advises that it contemplates no additional shop construction at this time, having recently completed a substantial addition to its core department.

Quick & Thomas Co., Auburn, N. Y., whose incorporation was recently noted, advises that it was incorporated to succeed the firm of Bowen & Quick, manufacturing farm and dairy machinery. Its business will be continued along the lines followed by the old firm and with the same equipment and plant.

The Southern Saw Works, Atlanta, Ga., has taken over the American Machinery Co., that city, the capital stock has been increased and the corporate name changed to the Southern Saw & Machinery Works. A complete line of saws, tools, iron and wood-working machinery, steam engines, gasoline engines, saw mills, etc., will be manufactured and distributed.

At the recent annual meeting of the Federal Steel Foundry Co., of Chester, Pa., which is controlled by the Cramp Shipbuilding Co., Henry S. Grove, H. W. Hand and Albert Strauss were elected directors to fill the places of directors whose terms had expired. These officers were elected: President, Henry S. Grove; vice president, H. W. Hand; secretary and treasurer, Charles S. Taylor.

The new plant of the Brightman Mfg. Co., Columbus, O., has been completed and is now ready for operation. The plant was formerly located at Shelby, O., but was completely destroyed by fire on Dec. 19, 1910. The new buildings at Columbus are modern in all details of construction, and are equipped with an entire new stock of machinery. The company manufactures shafting, straightening and shafting machinery.

E. A. Henry and Harrold Hubbell, both of Columbus, O., have closed negotiations with the board of trade of Warren, O., for a site for a proposed mill in which they will manufacture mattress wire, copper wire and other like products. The Perkins site has been donated by the board, and contracts calling for the completion of the plant in 60 days have been signed. It is said that several hundred thousand dollars will be invested in the works.

The Armor Steel Foundry Co., Winton place, Cincinnati, successor to the Steel Foundry Co., Cincinnati, and the Armor Steel Foundry Co., Matthews, Ind., has completed the erection of additions and the installation of new equipment. A side-blow converter and cupola have been installed which will enable the company to manufacture small castings for automobile and tool manufacturers. The Armor Steel Foundry Co. is now equipped to manufacture castings up to 10 tons in weight by the basic or acid open-hearth and converter steel processes. In addition, this company will manufacture steel castings of any desired alloy, such as manganese, chrome, titanium and nickel and is also prepared to furnish castings, surface hardened by the Gebhard process.

Trade Notes

The Betz-Pierce Co., Engineers building, Cleveland, has been appointed agent for the merchant pipe of the Reading Iron Co., Reading, Pa.

The American Oxhydric Co., Milwaukee, manufacturer of oxygen and hydrogen gases and apparatus for the cutting and welding of metals, is issuing a new house organ called "Oxhydric Sparks." This book measures 9 x 3¼ inches and is well illustrated.

Fires

The iron foundry of the Grafton Foundry Co., Grafton, Wis., owned by Nentzleff Bros., was badly damaged by fire July 29, the loss being estimated at $15,000. Four months ago the Globe iron foundry at Grafton was seriously damaged, the loss being estimated at $10,000.